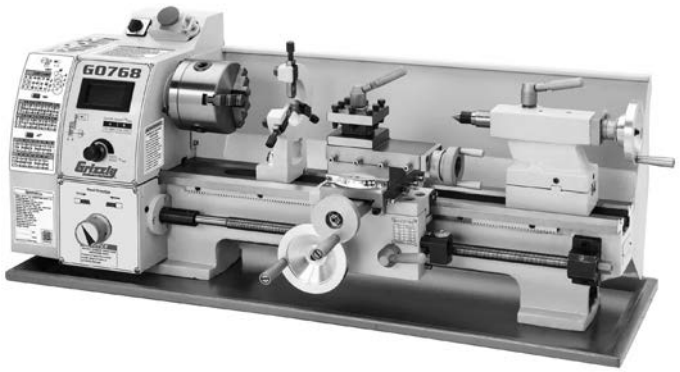
MODEL G0768/G0769
8" X 16" VARIABLE-SPEED LATHE & LATHE/MILL
OWNER'S MANUAL
(For models manufactured since 8/15)



Model G0768

Model G0769

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⚠ WARNING!

This manual provides critical safety instructions on the proper setup, operation, maintenance, and service of this machine/tool. Save this document, refer to it often, and use it to instruct other operators.

Failure to read, understand and follow the instructions in this manual may result in fire or serious personal injury—including amputation, electrocution, or death.

The owner of this machine/tool is solely responsible for its safe use. This responsibility includes but is not limited to proper installation in a safe environment, personnel training and usage authorization, proper inspection and maintenance, manual availability and comprehension, application of safety devices, cutting/sanding/grinding tool integrity, and the usage of personal protective equipment.

The manufacturer will not be held liable for injury or property damage from negligence, improper training, machine modifications or misuse.

⚠ WARNING!

Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:

- **Lead from lead-based paints.**
- **Crystalline silica from bricks, cement and other masonry products.**
- **Arsenic and chromium from chemically-treated lumber.**

Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: Work in a well ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles.

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INTRODUCTION

Machine Description

The Model G0768 and G0769 share lathe features such as a 600 Watt (¾ HP) 110V DC motor, variable-speed controls with digital RPM display, high/low spindle speed ranges, 4" 3-jaw and 4-jaw chucks, a convenient quick-lock tailstock, a 4-way turret toolpost, steady and follow rests, and reverse feed for cutting left-hand threads.

The Model G0769 additionally features a 600 Watt (¾ HP) milling headstock motor, 45° left/right head tilt, coarse and fine downfeed controls, Z-axis dovetailed ways for maximum precision, and a ½" drill chuck. The cross slide table features T-slots for mounting a vise. The lathe/mill selector switch also makes changing between lathe and milling modes easy.

Both machines can be mounted on a sturdy workbench, or the optional Model T26599 stand—with cabinet space for storing tooling and accessories.

Contact Info

We stand behind our machines! If you have questions or need help, contact us with the information below. Before contacting, make sure you get the **serial number** and **manufacture date** from the machine ID label. This will help us help you faster.

Grizzly Technical Support
1203 Lycoming Mall Circle
Muncy, PA 17756
Phone: (570) 546-9663
Email: techsupport@grizzly.com

We want your feedback on this manual. What did you like about it? Where could it be improved? Please take a few minutes to give us feedback.

Grizzly Documentation Manager
P.O. Box 2069
Bellingham, WA 98227-2069
Email: manuals@grizzly.com

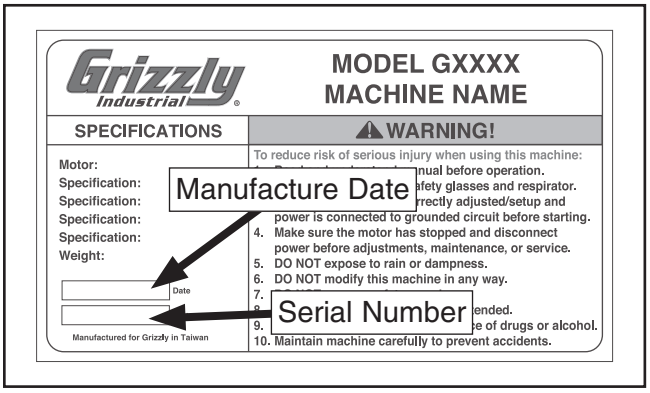
Manual Accuracy

We are proud to provide a high-quality owner's manual with your new machine!

We made every effort to be exact with the instructions, specifications, drawings, and photographs in this manual. Sometimes we make mistakes, but our policy of continuous improvement also means that **sometimes the machine you receive is slightly different than shown in the manual**.

If you find this to be the case, and the difference between the manual and machine leaves you confused or unsure about something, check our website for an updated version. We post current manuals and manual updates for free on our website at **www.grizzly.com**.

Alternatively, you can call our Technical Support for help. Before calling, make sure you write down the **Manufacture Date** and **Serial Number** from the machine ID label (see below). This information is required for us to provide proper tech support, and it helps us determine if updated documentation is available for your machine.



Identification (G0768)

Become familiar with the names and locations of the controls and features shown below to better understand the instructions in this manual.

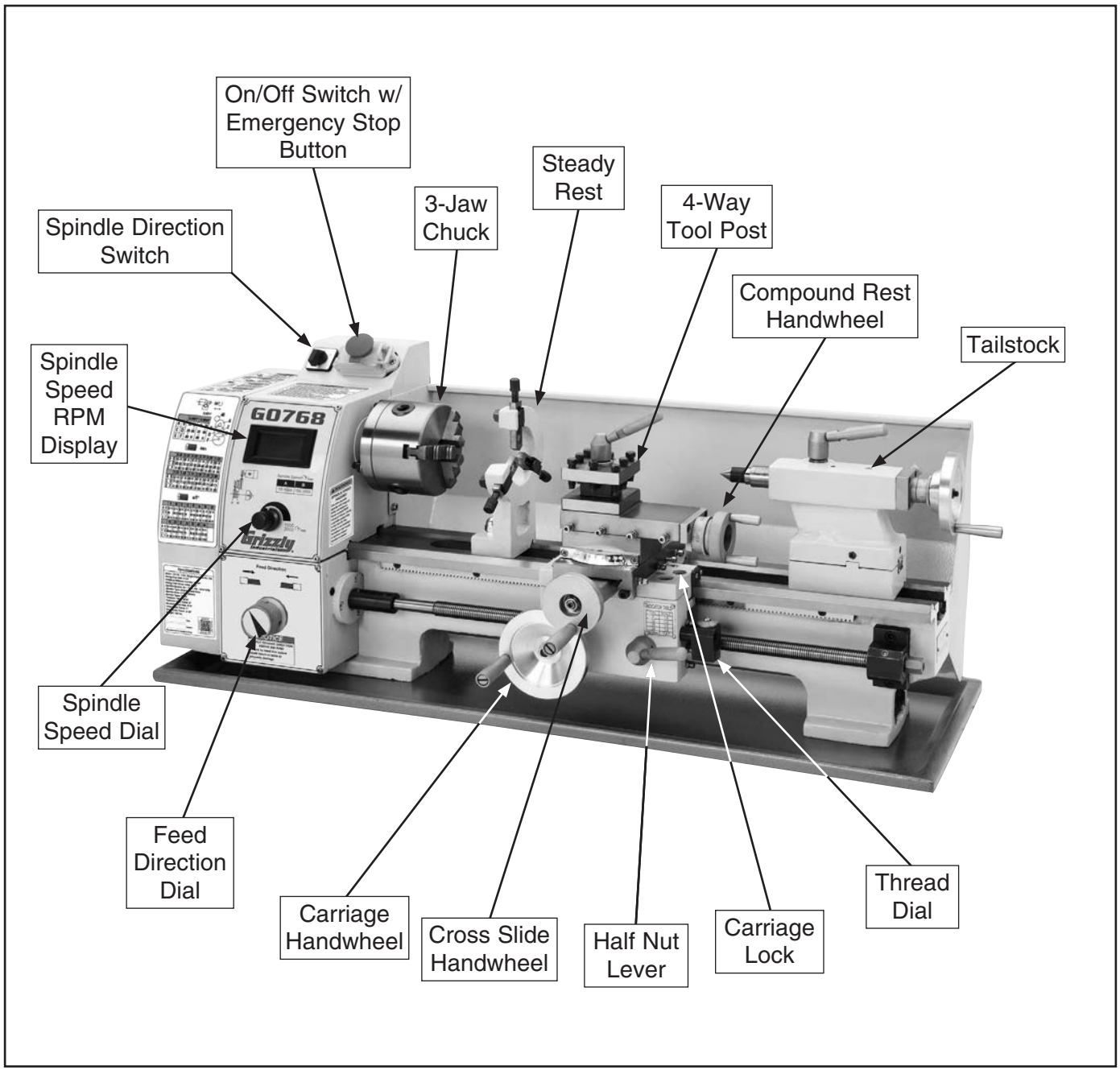
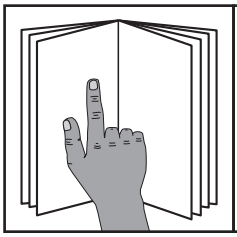


Figure 1. Model G0768 identification.



⚠WARNING

To reduce your risk of serious injury, read this entire manual BEFORE using machine.

Identification (G0769)

Become familiar with the names and locations of the controls and features shown below to better understand the instructions in this manual.

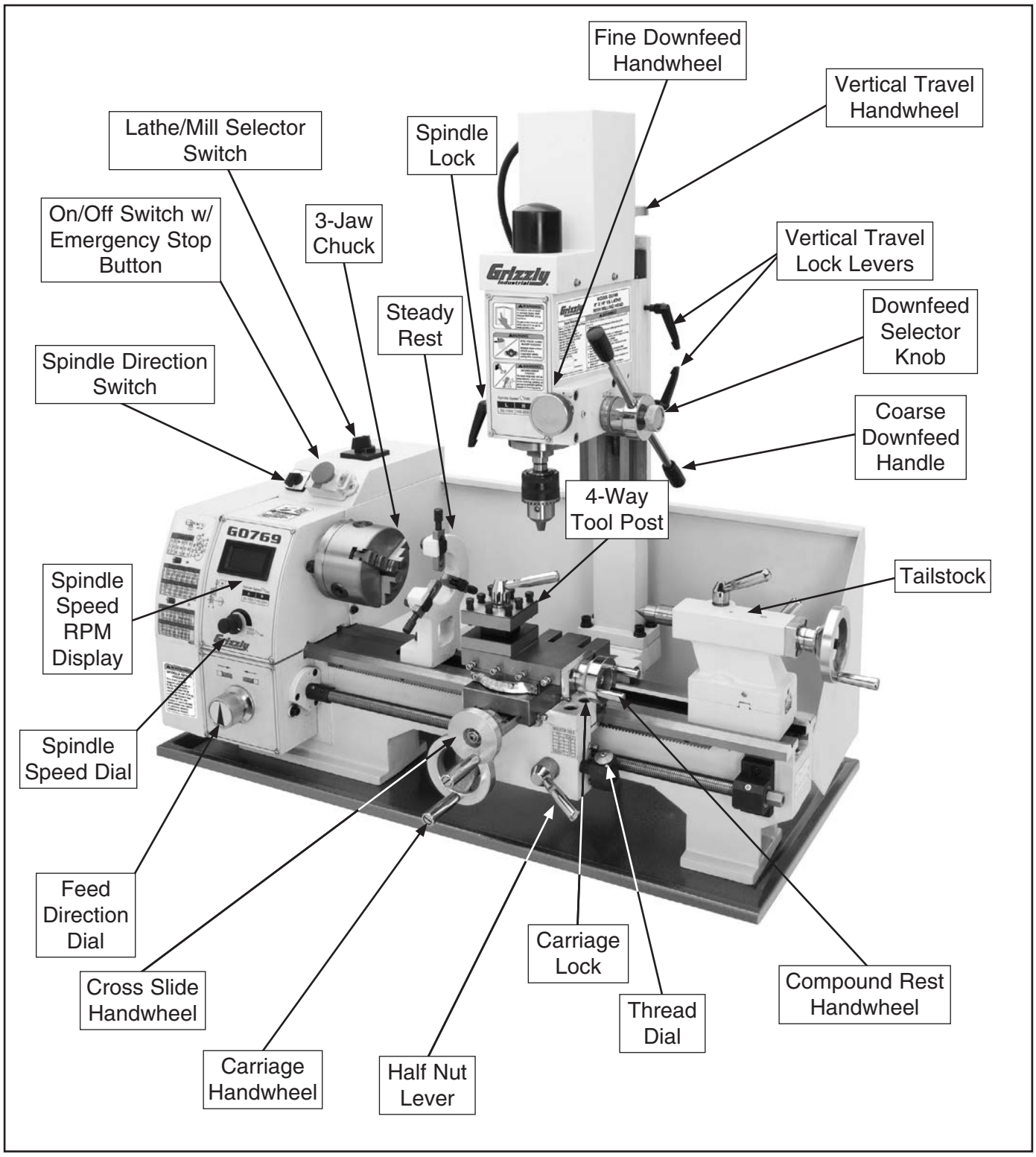
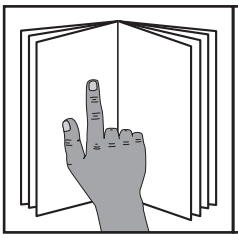


Figure 2. Model G0769 identification.

Controls & Components



⚠WARNING

To reduce your risk of serious injury, read this entire manual BEFORE using machine.

Refer to **Figures 3–8** and the following descriptions to become familiar with the basic controls of this machine.

Headstock

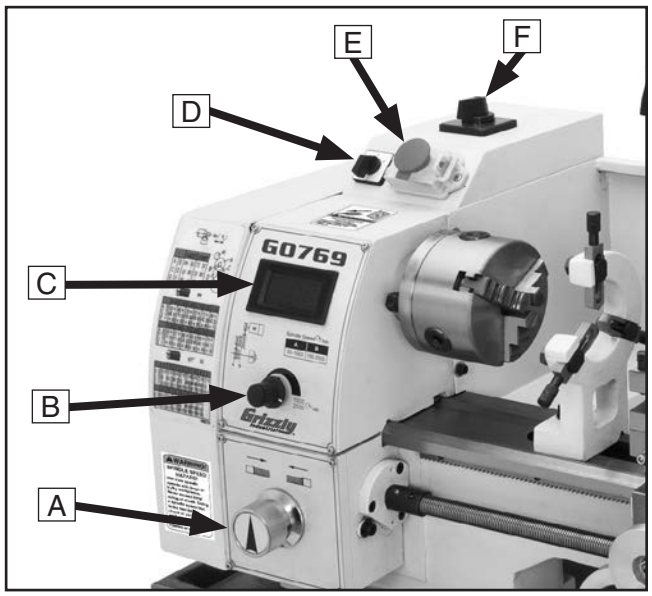


Figure 3. Control panel.

A. Feed Direction Dial: Used to select direction of leadscrew rotation when spindle is rotating in downward (F) direction. Used to switch between right or left thread cutting.

B. Spindle Speed Dial: Controls spindle speed.

C. Spindle Speed RPM Display: Shows spindle speed.

D. Spindle Direction Switch: Selects spindle rotation direction.

E. ON/OFF Switch w/Emergency Stop Button: When pressed, cuts power to motor and control panel. To reset, press front tab, lift switch cover, and press green ON button. Cover must be unlatched for machine to run.

F. Lathe/Mill Selector Switch (G0769 Only): Used to select between lathe mode (1), or mill mode (2).

Carriage

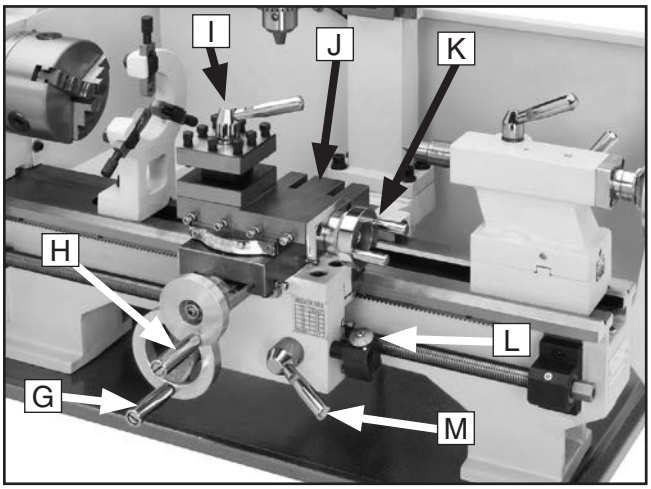


Figure 4. Carriage controls.

G. Carriage Handwheel: Manually moves carriage left or right along bedway.

H. Cross Slide Handwheel: Moves cross slide toward and away from workpiece.

I. 4-Way Tool Post: Holds up to four cutting tools at once that can be individually indexed to workpiece and quickly moved into position when needed.

J. Cross Slide Table (G0769 Only): Supports workpieces for milling/drilling operations. Includes T-slots for mounting milling vises or other fixtures.

K. Compound Rest Handwheel: Moves tool toward and away from workpiece at preset compound angle.

L. Thread Dial: Indicates when to engage the half nut during threading operations.

M. Half Nut Lever: Engages/disengages half nut for power feeding and threading operations.

Tailstock

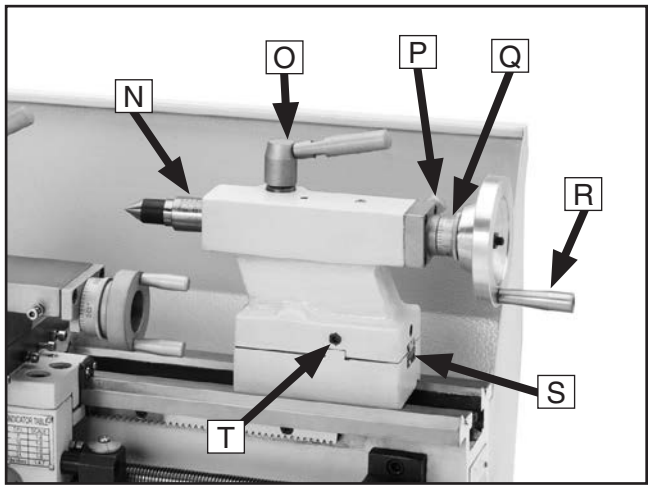


Figure 5. Tailstock controls.

N. Tailstock Quill: Uses an MT#2 taper to hold centers or other tooling, features a scale on top.

O. Tailstock Quill Lock Lever: Secures quill position.

P. Tailstock Lock Lever: Secures tailstock in position along bedway.

Q. Graduated Scale: Indicates quill movement in increments of 0.001", with one full revolution equaling 0.04" of quill travel.

R. Quill Handwheel: Moves quill toward or away from spindle.

S. Offset Scale: Indicates relative distance of tailstock offset from spindle centerline.

T. Tailstock Offset Screws: Adjusts tailstock offset left or right from spindle centerline (1 of 2).

End Gears, Pulleys, V-Belts

U. End Gears: The configuration of the end gears controls the leadscrew speed for power feeding, and inch and metric threading.

V. V-Belts: Transfer power from motor to idler and spindle pulleys. The position of the top V-belt on idler and spindle pulleys controls spindle speed.

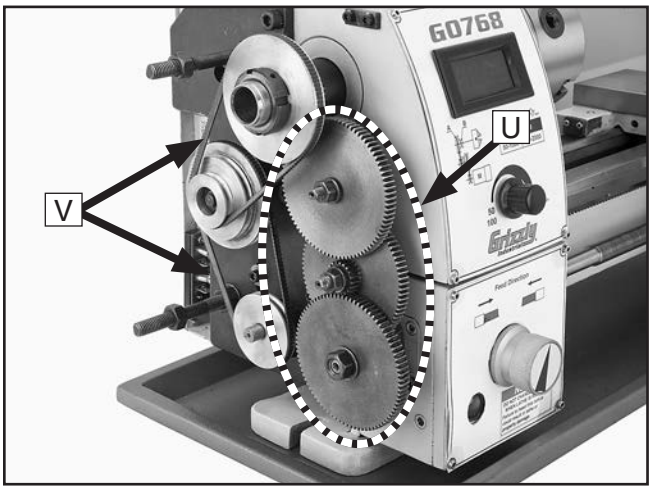


Figure 6. End gears, V-belts, and pulleys.

⚠WARNING

Serious personal injury could occur if you connect the machine to power before completing the setup process. DO NOT connect power until instructed to do so later in this manual.

Milling Headstock (G0769 Only)

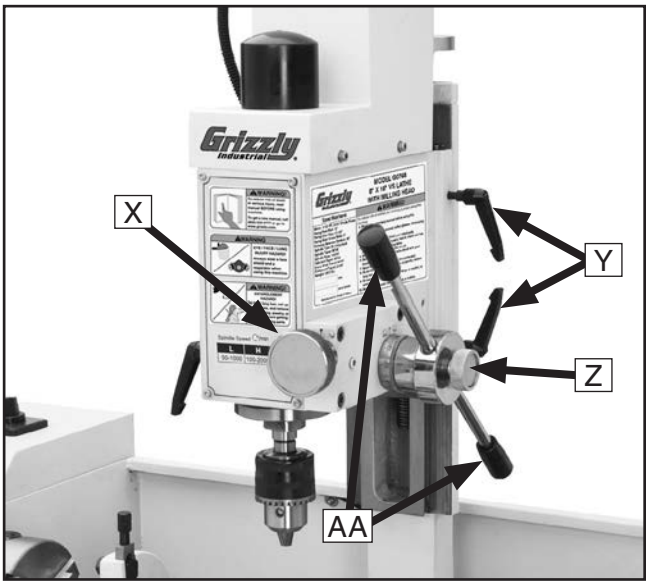


Figure 7. Right side milling headstock controls.

X. Fine Downfeed Handwheel: Provides fine control over vertical spindle travel to provide Z-axis control when milling.

Y. Vertical Travel Lock Levers: Locks position of headstock to column.

Z. Downfeed Selector Knob: Selects between fine and coarse downfeed modes. Tighten to engage fine downfeed. Loosen to use coarse downfeed.

AA. Coarse Downfeed Handles: Moves spindle down quickly when rotated and automatic spring return brings spindle back up to top when you release downward pressure on handles. Typically used for drilling holes or checking spindle positioning during setups.

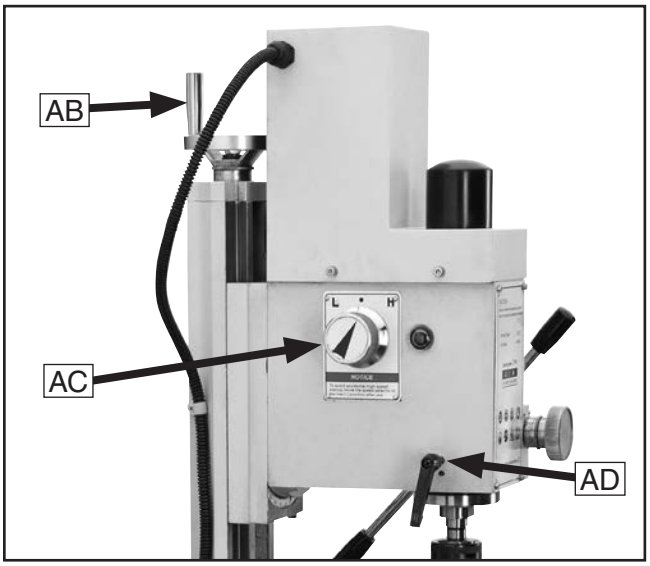


Figure 8. Left side milling headstock controls.

AB. Vertical Handwheel: Raises and lowers headstock for Z-axis control over spindle positioning during setups.

AC. High/Low Gearbox Knob: Selects low range "L" or high range "H" for spindle speed.

AD. Quill Lock Lever: Locks vertical position of quill (or Z-axis) when tightened. Typically used in conjunction with spindle downfeed controls when milling.

MACHINE DATA SHEET

Customer Service #: (570) 546-9663 · To Order Call: (800) 523-4777 · Fax #: (800) 438-5901

MODEL G0768 8" X 16" VARIABLE-SPEED LATHE

Product Dimensions:

Weight..... 144 lbs.
Width (side-to-side) x Depth (front-to-back) x Height..... 36 x 16 x 14 in.
Footprint (Length x Width)..... 31-1/2 x 10-1/2 in.

Shipping Dimensions:

Type..... Wood Crate
Content..... Machine
Weight..... 166 lbs.
Length x Width x Height..... 36 x 19 x 17 in.
Must Ship Upright..... Yes

Electrical:

Power Requirement..... 110V, Single-Phase, 60 Hz
Full-Load Current Rating..... 10A
Minimum Circuit Size..... 15A
Connection Type..... Cord & Plug
Power Cord Included..... Yes
Power Cord Length..... 6 ft.
Power Cord Gauge..... 16 AWG
Plug Included..... Yes
Included Plug Type..... 5-15
Switch Type..... ON/OFF Push Button Switch w/Safety Cover

Motors:

Main

Type..... Universal Brush-Type
Horsepower..... 600W (3/4 HP)
Phase..... Single-Phase
Amps..... 10A
Speed..... 5250 RPM
Power Transfer ..... Belt Drive
Bearings..... Shielded & Permanently Lubricated

Main Specifications:

Operation Info

Swing Over Bed..... 8-1/4 in.
Distance Between Centers..... 15-3/4 in.
Swing Over Cross Slide..... 4-5/8 in.
Swing Over Saddle..... 6-7/8 in.
Maximum Tool Bit Size..... 1/2 in.
Compound Travel..... 2-1/8 in.
Carriage Travel..... 15-3/4 in.
Cross Slide Travel..... 3 in.

Headstock Info

Spindle Bore	0.787 in.
Spindle Taper	MT#3
Number of Spindle Speeds	Variable
Spindle Speeds	50 – 1000, 100 – 2000 RPM
Spindle Type	Intrinsic Back Plate
Spindle Bearings	Tapered Roller
Spindle Length	8-5/8 in.
Spindle Length with 3-Jaw Chuck	10-5/8 in.
Spindle Length with 4-Jaw Chuck	10-5/8 in.
Spindle Length with Faceplate	9-3/4 in.

Tailstock Info

Tailstock Quill Travel	2 in.
Tailstock Taper	MT#2
Tailstock Barrel Diameter	0.87 in.

Threading Info

Number of Longitudinal Feeds	3
Range of Longitudinal Feeds	0.0037, 0.0068, 0.0071 in./rev.
Number of Inch Threads	15
Range of Inch Threads	9 – 44 TPI
Number of Metric Threads	12
Range of Metric Threads	0.4 – 3.0 mm

Dimensions

Bed Width	4 in.
Carriage Leadscrew Diameter	5/8 in.
Leadscrew TPI	12 TPI
Carriage Leadscrew Length	22 in.
Steady Rest Capacity	1/4 – 1-1/4 in.
Follow Rest Capacity	1/4 – 1-1/4 in.
Floor to Center Height	8-1/2 in.

Other

Optional Stand	Model T26599

Construction

Base	Cast Iron
Headstock	Cast Iron
End Gears	Steel
Bed	Precision-Ground Cast Iron
Paint Type/Finish	Epoxy

Other Specifications:

Country of Origin	China
Warranty	1 Year
Approximate Assembly & Setup Time	1 Hour
Serial Number Location	ID Label
ISO 9001 Factory	Yes
CSA, ETL, or UL Certified/Listed	No

MACHINE DATA SHEET

Customer Service #: (570) 546-9663 · To Order Call: (800) 523-4777 · Fax #: (800) 438-5901

MODEL G0769 8" X 16" LATHE WITH MILLING HEAD

Product Dimensions:

Weight..... 234 lbs.
Width (side-to-side) x Depth (front-to-back) x Height..... 36 x 20 x 28 in.
Footprint (Length x Width)..... 31-1/2 x 10-1/2 in.

Shipping Dimensions:

Type..... Wood Crate
Content..... Machine
Weight..... 287 lbs.
Length x Width x Height..... 36 x 23 x 35 in.
Must Ship Upright..... Yes

Electrical:

Power Requirement..... 110V, Single-Phase, 60 Hz
Full-Load Current Rating..... 10A
Minimum Circuit Size..... 15A
Connection Type..... Cord & Plug
Power Cord Included..... Yes
Power Cord Length..... 6 ft.
Power Cord Gauge..... 16 AWG
Plug Included..... Yes
Included Plug Type..... 5-15
Switch Type..... ON/OFF Push Button Switch w/Safety Cover

Motors:

Lathe Spindle

Type..... Universal Brush-Type
Horsepower..... 600W (3/4 HP)
Phase..... Single-Phase
Amps..... 10A
Speed..... 5250 RPM
Power Transfer ..... Belt Drive
Bearings..... Shielded & Permanently Sealed

Mill Spindle

Type..... Universal Brush-Type
Horsepower..... 600W (3/4 HP)
Phase..... Single-Phase
Amps..... 10A
Speed..... 4800 RPM
Power Transfer ..... Gear Drive
Bearings..... Shielded & Permanently Sealed

Main Specifications:

Lathe Info

Swing Over Bed	8-1/4 in.
Distance Between Centers	15-3/4 in.
Swing Over Cross Slide	4-5/8 in.
Swing Over Saddle	6-7/8 in.
Maximum Tool Bit Size	1/2 in.
Compound Travel	2-1/8 in.
Carriage Travel	15-3/4 in.
Cross Slide Travel	3 in.
Spindle Bore	0.787 in. (20mm)
Spindle Taper	MT#3
Number Of Spindle Speeds	Variable
Spindle Speeds	50 – 1000, 100 – 2000 RPM
Spindle Type	Intrinsic Back Plate
Tailstock Quill Travel	2 in.
Tailstock Taper	MT#2
Number of Longitudinal Feeds	3
Range of Longitudinal Feeds	0.0037", 0.0068", 0.0071" in./rev.
Number of Inch Threads	15
Range of Inch Threads	9 – 44 TPI
Number of Metric Threads	12
Range of Metric Threads	0.4 – 3.0 mm

Mill Info

Mill Taper	MT#2
Mill Spindle Travel	1-3/4 in.
Mill Swing	13 in.
Distance Spindle To Work Table	9-7/8 in.
Distance Spindle To Bed	11-1/2 in.
Distance Spindle To Center Line	7-3/4 in.
Mill Head Vertical Travel	6-5/16 in.
Mill Head Tilt (Left/Right)	Left 45, Right 45 deg.
Maximum Tool Bit Size	1/2 in.
Drilling Capacity For Steel	1/2 in.
Drilling Capacity For Cast Iron	1/2 in.
Table Size Length	7-1/4 in.
Table Size Width	3-1/8 in.
Table Size Thickness	1-1/8 in.
Number of T-Slots	2
T-Slot Size	1/4 in.
T-Slot Centers	1-1/2 in.
Drawbar Diameter	3/8 in.
Drawbar TPI	16 TPI
Drawbar Length	8-1/2 in.
Number of Mill Drill Speeds	2
Mill Speed Range	50 – 2000 RPM

Construction

Bed	Cast Iron
Headstock	Cast Iron
Body	Cast Iron
End Gears	Steel
Paint Type/Finish	Epoxy

SECTION 1: SAFETY

For Your Own Safety, Read Instruction Manual Before Operating This Machine

The purpose of safety symbols is to attract your attention to possible hazardous conditions. This manual uses a series of symbols and signal words intended to convey the level of importance of the safety messages. The progression of symbols is described below. Remember that safety messages by themselves do not eliminate danger and are not a substitute for proper accident prevention measures. Always use common sense and good judgment.

⚠DANGER **Indicates an imminently hazardous situation which, if not avoided, WILL result in death or serious injury.**

⚠WARNING **Indicates a potentially hazardous situation which, if not avoided, COULD result in death or serious injury.**

⚠CAUTION **Indicates a potentially hazardous situation which, if not avoided, MAY result in minor or moderate injury. It may also be used to alert against unsafe practices.**

NOTICE **This symbol is used to alert the user to useful information about proper operation of the machine.**

Safety Instructions for Machinery

⚠WARNING

OWNER'S MANUAL. Read and understand this owner's manual BEFORE using machine.

TRAINED OPERATORS ONLY. Untrained operators have a higher risk of being hurt or killed. Only allow trained/supervised people to use this machine. When machine is not being used, disconnect power, remove switch keys, or lock-out machine to prevent unauthorized use—especially around children. Make workshop kid proof!

DANGEROUS ENVIRONMENTS. Do not use machinery in areas that are wet, cluttered, or have poor lighting. Operating machinery in these areas greatly increases the risk of accidents and injury.

MENTAL ALERTNESS REQUIRED. Full mental alertness is required for safe operation of machinery. Never operate under the influence of drugs or alcohol, when tired, or when distracted.

ELECTRICAL EQUIPMENT INJURY RISKS. You can be shocked, burned, or killed by touching live electrical components or improperly grounded machinery. To reduce this risk, only allow qualified service personnel to do electrical installation or repair work, and always disconnect power before accessing or exposing electrical equipment.

DISCONNECT POWER FIRST. Always disconnect machine from power supply BEFORE making adjustments, changing tooling, or servicing machine. This prevents an injury risk from unintended startup or contact with live electrical components.

EYE PROTECTION. Always wear ANSI-approved safety glasses or a face shield when operating or observing machinery to reduce the risk of eye injury or blindness from flying particles. Everyday eyeglasses are NOT approved safety glasses.

⚠WARNING

WEARING PROPER APPAREL. Do not wear clothing, apparel or jewelry that can become entangled in moving parts. Always tie back or cover long hair. Wear non-slip footwear to reduce risk of slipping and losing control or accidentally contacting cutting tool or moving parts.

HAZARDOUS DUST. Dust created by machinery operations may cause cancer, birth defects, or long-term respiratory damage. Be aware of dust hazards associated with each workpiece material. Always wear a NIOSH-approved respirator to reduce your risk.

HEARING PROTECTION. Always wear hearing protection when operating or observing loud machinery. Extended exposure to this noise without hearing protection can cause permanent hearing loss.

REMOVE ADJUSTING TOOLS. Tools left on machinery can become dangerous projectiles upon startup. Never leave chuck keys, wrenches, or any other tools on machine. Always verify removal before starting!

USE CORRECT TOOL FOR THE JOB. Only use this tool for its intended purpose—do not force it or an attachment to do a job for which it was not designed. Never make unapproved modifications—modifying tool or using it differently than intended may result in malfunction or mechanical failure that can lead to personal injury or death!

AWKWARD POSITIONS. Keep proper footing and balance at all times when operating machine. Do not overreach! Avoid awkward hand positions that make workpiece control difficult or increase the risk of accidental injury.

CHILDREN & BYSTANDERS. Keep children and bystanders at a safe distance from the work area. Stop using machine if they become a distraction.

GUARDS & COVERS. Guards and covers reduce accidental contact with moving parts or flying debris. Make sure they are properly installed, undamaged, and working correctly BEFORE operating machine.

FORCING MACHINERY. Do not force machine. It will do the job safer and better at the rate for which it was designed.

NEVER STAND ON MACHINE. Serious injury may occur if machine is tipped or if the cutting tool is unintentionally contacted.

STABLE MACHINE. Unexpected movement during operation greatly increases risk of injury or loss of control. Before starting, verify machine is stable and mobile base (if used) is locked.

USE RECOMMENDED ACCESSORIES. Consult this owner's manual or the manufacturer for recommended accessories. Using improper accessories will increase the risk of serious injury.

UNATTENDED OPERATION. To reduce the risk of accidental injury, turn machine ***OFF*** and ensure all moving parts completely stop before walking away. Never leave machine running while unattended.

MAINTAIN WITH CARE. Follow all maintenance instructions and lubrication schedules to keep machine in good working condition. A machine that is improperly maintained could malfunction, leading to serious personal injury or death.

DAMAGED PARTS. Regularly inspect machine for damaged, loose, or mis-adjusted parts—or any condition that could affect safe operation. Immediately repair/replace BEFORE operating machine. For your own safety, DO NOT operate machine with damaged parts!

MAINTAIN POWER CORDS. When disconnecting cord-connected machines from power, grab and pull the plug—NOT the cord. Pulling the cord may damage the wires inside. Do not handle cord/plug with wet hands. Avoid cord damage by keeping it away from heated surfaces, high traffic areas, harsh chemicals, and wet/damp locations.

EXPERIENCING DIFFICULTIES. If at any time you experience difficulties performing the intended operation, stop using the machine! Contact our Technical Support at (570) 546-9663.

Additional Safety for Metal Lathes

⚠WARNING

The primary risks of operating a Metal Lathe are as follows: You can be seriously injured or killed by getting entangled in, crushed between, or struck by rotating parts on a lathe. You can be struck with deadly force by unsecured tools or workpieces attached to rotating objects. To reduce your risk of serious injury when operating this machine, completely heed and understand the following:

CLOTHING, JEWELRY & LONG HAIR. Tie back long hair, remove jewelry, and do not wear loose clothing or gloves. These can easily get caught on rotating parts and pull you into lathe.

ROTATING PARTS. Always keep hands and body at a safe distance from rotating parts—especially those with projecting surfaces. Never hold anything against rotating workpiece, such as emery cloth, that can pull you into lathe.

GUARDING. Guards and covers protect against entanglement or flying objects. Always ensure they are properly installed while machine is running.

ADJUSTMENT TOOLS. Remove all chuck keys, wrenches, and adjustment tools before turning lathe ***ON***. A tool left on the lathe can become a deadly projectile when spindle is started.

SAFE CLEARANCES. Before starting spindle, verify workpiece has adequate clearance by hand-rotating it through its entire range of motion.

NEW SETUPS. Test each new setup by starting spindle rotation at the lowest speed and standing to the side of the lathe until workpiece reaches full speed and you can verify safe rotation.

SPINDLE SPEEDS. Using spindle speeds that are too fast for the workpiece or clamping equipment can cause rotating parts to come loose and strike nearby people with deadly force. Always use slow spindle speeds with large or non-concentric workpieces. Never exceed rated RPM of the chuck.

CHUCKS. Chucks can be heavy and difficult to hold. During installation and removal, protect your hands and precision bed ways by using a chuck cradle or piece of plywood over the bed ways. Use lifting equipment, as necessary, for large chucks.

LONG STOCK SAFETY. Long stock can whip violently if not properly supported. Always support any stock that extends from the chuck/headstock more than three times its own diameter.

CLEARING CHIPS. Metal chips can be razor sharp. Avoid clearing them by hand or with a rag. Use a brush or vacuum instead.

SECURE WORKPIECE. An improperly secured workpiece can fly off spindle with deadly force. Make sure workpiece is properly secured before starting the lathe.

STOPPING SPINDLE. Always allow spindle to completely stop on its own, or use a brake, if provided. Never put hands or another object on a spinning workpiece to make it stop faster.

CRASHING. A serious explosion of metal parts can occur if cutting tool or other lathe component hits rotating chuck or a projecting part of workpiece. Resulting metal fragments can strike nearby people and lathe will be seriously damaged. To reduce risk of crashing, ALWAYS release automatic feeds after use, NEVER leave lathe unattended, and CHECK all clearances before starting lathe.

TOOL SELECTION. Cutting with incorrect or dull tooling increases risk of injury from broken or dislodged components, or as a result of extra force required for operation. Always use sharp tooling that is right for the job.

SANDING/POLISHING. To reduce risk of entanglement, never wrap emery cloth around rotating workpiece. Instead, use emery cloth with the aid of a tool or backing board.

MEASURING WORKPIECE. To reduce risk of entanglement, never measure rotating workpieces.

Additional Safety for Mills/Drills

⚠WARNING

The primary risks of operating a mill are as follows: You can be seriously injured or killed by getting clothing, jewelry, or long hair entangled with rotating cutter. You can be severely cut or have fingers amputated from contact with the rotating cutter. You can be blinded or struck by broken cutting tools, metal chips, workpieces, or adjustment tools thrown from the rotating spindle with great force. To reduce your risk of serious injury when operating this machine, completely heed and understand the following:

UNDERSTAND ALL CONTROLS. Make sure you understand the function and proper use of all controls before starting. This will help you avoid making mistakes that result in serious injury.

WEAR FACE SHIELD. Always wear a face shield in addition to safety glasses. This provides more complete protection for your face than safety glasses alone.

REMOVE CHUCK KEY & SPINDLE TOOLS. Always remove chuck key, drawbar wrench, and other tools used on the spindle immediately after use. This will prevent them from being thrown by the spindle upon startup.

PROPERLY SECURE CUTTER. Firmly secure cutting tool or drill bit so it does not fly out of spindle during operation.

USE CORRECT SPINDLE SPEED. Follow recommended speeds and feeds for each size and type of cutting tool. This helps avoid tool breakage during operation and ensures best cutting results.

INSPECT CUTTING TOOL. Inspect cutting tools for sharpness, chips, or cracks before each use. Replace dull, chipped, or cracked cutting tools immediately.

ALLOW SPINDLE TO STOP. To minimize your risk of entanglement, always allow spindle to stop on its own. DO NOT stop spindle using your hand or any other object.

SECURE WORKPIECE TO TABLE. Clamp workpiece to table or secure in a vise mounted to table, so workpiece cannot unexpectedly shift or spin during operation. NEVER hold workpiece by hand during operation.

CLEAN MACHINE SAFELY. Metal chips or shavings can be razor sharp. DO NOT clear chips by hand or compressed air that can force chips farther into machine—use a brush or vacuum instead. Never clear chips while spindle is turning.

PROPERLY MAINTAIN MACHINE. Keep machine in proper working condition to help ensure that it functions safely and all guards and other components work as intended. Perform routine inspections and all necessary maintenance. Never operate machine with damaged or worn parts that can break or result in unexpected movement during operation.

DISCONNECT POWER FIRST. To reduce risk of electrocution or injury from unexpected startup, make sure mill/drill is turned ***OFF***, disconnected from power, and all moving parts have come to a complete stop before changing cutting tools or starting any inspection, adjustment, or maintenance procedure.

POWER DISRUPTION. In the event of a local power outage during operation, turn spindle switch ***OFF*** to avoid a possible sudden startup once power is restored.

Additional Lathe Chuck Safety

⚠WARNING

ENTANGLEMENT. Entanglement with a rotating chuck can lead to death, amputation, broken bones, or other serious injury. Never attempt to slow or stop the lathe chuck by hand, and always roll up long sleeves, tie back long hair, and remove any jewelry or loose apparel BEFORE operating.

CHUCK SPEED RATING. Excessive spindle speeds greatly increase the risk of the workpiece or chuck being thrown from the machine with deadly force. Never use spindle speeds faster than the chuck RPM rating or the safe limits of your workpiece.

USING CORRECT EQUIPMENT. Many workpieces can only be safely turned in a lathe if additional support equipment, such as a tailstock or steady/follow rest, is used. If the operation is too hazardous to be completed with the lathe or existing equipment, the operator must have enough experience to know when to use a different machine or find a safer way.

TRAINED OPERATORS ONLY. Using a chuck incorrectly can result in workpieces coming loose at high speeds and striking the operator or bystanders with deadly force. To reduce the risk of this hazard, read and understand this document and seek additional training from an experienced chuck user before using a chuck.

CHUCK CAPACITY. Avoid exceeding the capacity of the chuck by clamping an oversized workpiece. If the workpiece is too large to safely clamp with the chuck, use a faceplate or a larger chuck if possible. Otherwise, the workpiece could be thrown from the lathe during operation, resulting in serious impact injury or death.

CLAMPING FORCE. Inadequate clamping force can lead to the workpiece being thrown from the chuck and striking the operator or bystanders. Maximum clamping force is achieved when the chuck is properly maintained and lubricated, all jaws are fully engaged with the workpiece, and the maximum chuck clamping diameter is not exceeded.

PROPER MAINTENANCE. All chucks must be properly maintained and lubricated to achieve maximum clamping force and withstand the rigors of centrifugal force. To reduce the risk of a thrown workpiece, follow all maintenance intervals and instructions in this document.

DISCONNECT POWER. Serious entanglement or impact injuries could occur if the lathe is started while you are adjusting, servicing, or installing the chuck. Always disconnect the lathe from power before performing these procedures.

SECTION 2: POWER SUPPLY

Availability

Before installing the machine, consider the availability and proximity of the required power supply circuit. If an existing circuit does not meet the requirements for this machine, a new circuit must be installed. To minimize the risk of electrocution, fire, or equipment damage, installation work and electrical wiring must be done by an electrician or qualified service personnel in accordance with all applicable codes and standards.

⚠WARNING

Electrocution, fire, or equipment damage may occur if machine is not correctly grounded and connected to the power supply.

Full-Load Current Rating

The full-load current rating is the amperage a machine draws at 100% of the rated output power. On machines with multiple motors, this is the amperage drawn by the largest motor or sum of all motors and electrical devices that might operate at one time during normal operations.

Full-Load Rating 10A

The full-load current is not the maximum amount of amps that the machine will draw. If the machine is overloaded, it will draw additional amps beyond the full-load rating.

If the machine is overloaded for a sufficient length of time, damage, overheating, or fire may result—especially if connected to an undersized circuit. To reduce the risk of these hazards, avoid overloading the machine during operation and make sure it is connected to a power supply circuit that meets the specified circuit requirements.

⚠WARNING

Serious injury could occur if you connect machine to power before completing setup process. DO NOT connect to power until instructed later in this manual.

110V Circuit Requirements

This machine is prewired to operate on a power supply circuit that has a verified ground and meets the following requirements:

Nominal Voltage 110V, 115V, 120V
Cycle ..... 60 Hz
Phase ..... Single-Phase
Power Supply Circuit ..... 15 Amps

A power supply circuit includes all electrical equipment between the breaker box or fuse panel in the building and the machine. The power supply circuit used for this machine must be sized to safely handle the full-load current drawn from the machine for an extended period of time. (If this machine is connected to a circuit protected by fuses, use a time delay fuse marked D.)

⚠CAUTION

For your own safety and protection of property, consult an electrician if you are unsure about wiring practices or electrical codes in your area.

Note: *Circuit requirements in this manual apply to a dedicated circuit—where only one machine will be running on the circuit at a time. If machine will be connected to a shared circuit where multiple machines may be running at the same time, consult an electrician or qualified service personnel to ensure circuit is properly sized for safe operation.*

Grounding & Plug Requirements

This machine MUST be grounded. In the event of certain malfunctions or breakdowns, grounding reduces the risk of electric shock by providing a path of least resistance for electric current.

This machine is equipped with a power cord that has an equipment-grounding wire and a grounding plug. Only insert plug into a matching receptacle (outlet) that is properly installed and grounded in accordance with all local codes and ordinances. DO NOT modify the provided plug!

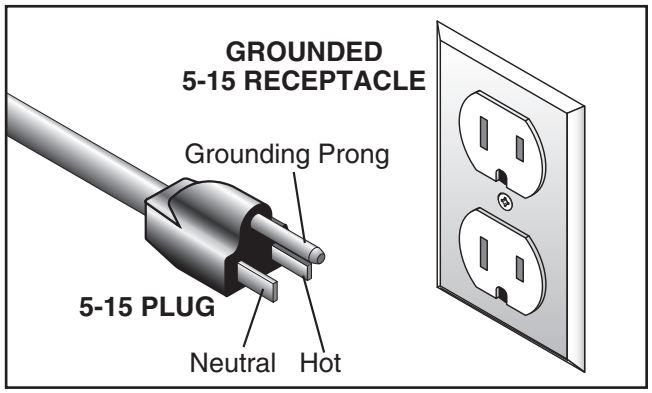
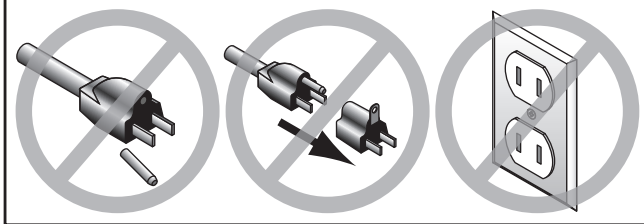


Figure 9. Typical 5-15 plug and receptacle.

⚠CAUTION



SHOCK HAZARD!

Two-prong outlets do not meet the grounding requirements for this machine. Do not modify or use an adapter on the plug provided—if it will not fit the outlet, have a qualified electrician install the proper outlet with a verified ground.

Improper connection of the equipment-grounding wire can result in a risk of electric shock. The wire with green insulation (with or without yellow stripes) is the equipment-grounding wire. If repair or replacement of the power cord or plug is necessary, do not connect the equipment-grounding wire to a live (current carrying) terminal.

Check with a qualified electrician or service personnel if you do not understand these grounding requirements, or if you are in doubt about whether the tool is properly grounded. If you ever notice that a cord or plug is damaged or worn, disconnect it from power, and immediately replace it with a new one.

Extension Cords

We do not recommend using an extension cord with this machine. If you must use an extension cord, only use it if absolutely necessary and only on a temporary basis.

Extension cords cause voltage drop, which can damage electrical components and shorten motor life. Voltage drop increases as the extension cord size gets longer and the gauge size gets smaller (higher gauge numbers indicate smaller sizes).

Any extension cord used with this machine must be in good condition and contain a ground wire and matching plug/receptacle. Additionally, it must meet the following size requirements:

Minimum Gauge Size .....14 AWG
Maximum Length (Shorter is Better).....50 ft.

SECTION 3: SETUP

Setup Overview

The list below outlines the basic process of setting up the machine for first-time operation. Specific steps are covered later in this section.

The typical setup process is as follows:

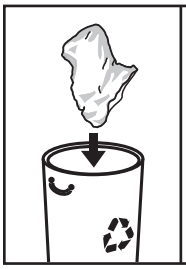
1. Unpack machine and inventory contents of box/crate.
2. Clean machine and its components.
3. Move machine to an acceptable location.
4. Assemble machine and make sure it is ready for operation.
5. Connect machine to power source.
6. Test run machine and various safety components to ensure they function properly.
7. Perform spindle break-in procedure to prepare spindle bearings for operational loads.

Unpacking

Your machine was carefully packaged for safe transportation. Remove the packaging materials from around your machine and inspect it. If you discover any damage, *please call us immediately at (570) 546-9663 for advice.*

Save the containers and all packing materials for possible inspection by the carrier or its agent. *Otherwise, filing a freight claim can be difficult.*

When you are completely satisfied with the condition of your shipment, inventory the contents.



⚠WARNING

SUFFOCATION HAZARD!

Keep children and pets away from plastic bags or packing materials shipped with this machine. Discard immediately.

Needed for Setup

The following are needed to complete the setup process, but are not included with your machine.

Description

- Additional People
- Safety Glasses
- Cleaner/Degreaser (**Page 22**)
- Quality Metal Protectant
- Disposable Shop Rags
- Forklift
- Lifting Slings (rated for at least 300 lbs.)
- Mounting Hardware (**Page 25**)

Inventory

The following is a list of items shipped with your machine. Before beginning setup, lay these items out and inventory them.

If any non-proprietary parts are missing (e.g. a nut or a washer), we will gladly replace them; or for the sake of expediency, replacements can be obtained at your local hardware store.

Installed Components (Figure 10) **Qty.**

A. 3-Jaw Chuck 4" w/Internal Jaw Set 1
B. Steady Rest 1
C. 4-Way Tool Post 1
D. Drill Chuck ½" w/Chuck Key (G0769) 1
E. Milling Headstock (G0769) 1
F. Backsplash 1
G. Tailstock 1
H. Follow Rest (Not Shown) 1

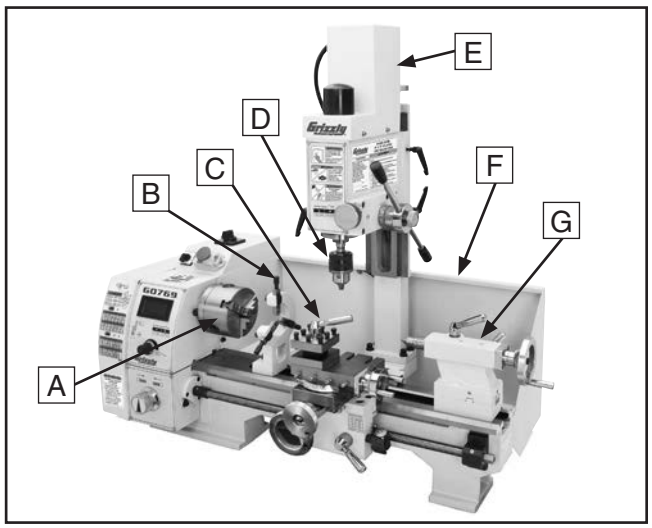


Figure 10. Installed components (G0769 shown).

Loose Components (Figure 11) **Qty.**

I. Chip Pan (Not Shown) 1
J. Toolbox 1
K. Oil Bottle for Oil 1
L. Faceplate 6¾" 1
M. 3-Jaw Chuck External Jaw Set 1
N. Hex Wrench Set (2.5, 3, 4, 5, 6mm) ..... 1 Ea
O. Flat Head Screwdriver #2 1
P. Phillips Head Screwdriver #2 1
Q. Spanner Wrench 1
R. Wrench Set (6/7, 8/10, 14/16mm) 1
S. Lathe Chuck Key 1
T. Square Socket T-Wrench 1
U. Handwheel Handles 2
V. Fuse Set 1
— 10A (G0768) 1
— 15A (G0768) 1
— 10A (G0769) 2
— 15A (G0769) 1
W. Dead Center MT#2 1
X. Dead Center MT#3 1
Y. Change Gear Set 1
— Change Gear (20-tooth, Installed) 2
— Change Gear (30-tooth, Installed) 2
— Change Gear (33-tooth) 1
— Change Gear (40-tooth) 1
— Change Gear (50-tooth) 1
— Change Gear (53-tooth) 1
— Change Gear (55-tooth) 1
— Change Gear (57-tooth) 1
— Change Gear (60-tooth) 1
— Change Gear (63-tooth) 1
— Change Gear (65-tooth) 1
— Change Gear (70-tooth) 1
— Change Gear (71-tooth) 1
— Change Gear (72-tooth) 1
— Change Gear (80-tooth, Installed) 2
— Change Gear (84-tooth, Installed) 1
Z. 4-Jaw Universal Chuck 4" (Not Shown) 1

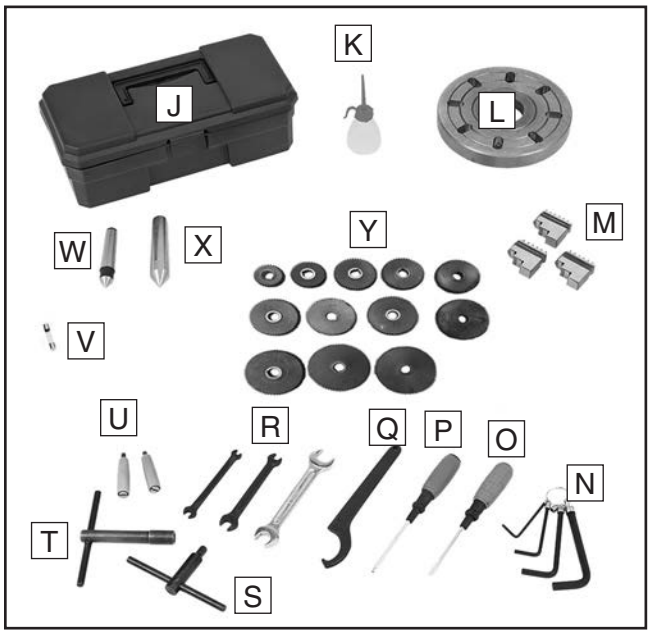


Figure 11. Packaged components.

NOTICE

If you cannot find an item on this list, carefully check around/inside the machine and packaging materials. Often, these items get lost in packaging materials while unpacking or they are pre-installed at the factory.

Cleanup

The unpainted surfaces of your machine are coated with a heavy-duty rust preventative that prevents corrosion during shipment and storage. This rust preventative works extremely well, but it will take a little time to clean.

Be patient and do a thorough job cleaning your machine. The time you spend doing this now will give you a better appreciation for the proper care of your machine's unpainted surfaces.

There are many ways to remove this rust preventative, but the following steps work well in a wide variety of situations. Always follow the manufacturer's instructions with any cleaning product you use and make sure you work in a well-ventilated area to minimize exposure to toxic fumes.

Before cleaning, gather the following:
- Disposable rags
- Cleaner/degreaser (WD•40 works well)
- Safety glasses & disposable gloves
- Plastic paint scraper (optional)

Basic steps for removing rust preventative:

1. Put on safety glasses.

2. Coat the rust preventative with a liberal amount of cleaner/degreaser, then let it soak for 5–10 minutes.

3. Wipe off the surfaces. If your cleaner/degreaser is effective, the rust preventative will wipe off easily. If you have a plastic paint scraper, scrape off as much as you can first, then wipe off the rest with the rag.

4. Repeat **Steps 2–3** as necessary until clean, then coat all unpainted surfaces with a quality metal protectant to prevent rust.

⚠WARNING

Gasoline and petroleum products have low flash points and can explode or cause fire if used to clean machinery. Avoid using these products to clean machinery.

⚠CAUTION

Many cleaning solvents are toxic if inhaled. Only work in a well-ventilated area.

NOTICE

Avoid chlorine-based solvents, such as acetone or brake parts cleaner, that may damage painted surfaces.

T23692—Orange Power Degreaser
A great product for removing the waxy shipping grease from your machine during clean up.

Figure 12. T23692 Orange Power Degreaser.

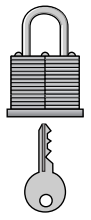
Site Considerations

Weight Load

Refer to the **Machine Data Sheet** for the weight of your machine. Make sure that the surface upon which the machine is placed will bear the weight of the machine, additional equipment that may be installed on the machine, and the heaviest workpiece that will be used. Additionally, consider the weight of the operator and any dynamic loading that may occur when operating the machine.

Space Allocation

Consider the largest size of workpiece that will be processed through this machine and provide enough space around the machine for adequate operator material handling or the installation of auxiliary equipment. With permanent installations, leave enough space around the machine to open or remove doors/covers as required by the maintenance and service described in this manual. **See below for required space allocation.**



⚠CAUTION

Children or untrained people may be seriously injured by this machine. Only install in an access restricted location.

Physical Environment

The physical environment where the machine is operated is important for safe operation and longevity of machine components. For best results, operate this machine in a dry environment that is free from excessive moisture, hazardous chemicals, airborne abrasives, or extreme conditions. Extreme conditions for this type of machinery are generally those where the ambient temperature range exceeds 41°–104°F; the relative humidity range exceeds 20%–95% (non-condensing); or the environment is subject to vibration, shocks, or bumps.

Electrical Installation

Place this machine near an existing power source. Make sure all power cords are protected from traffic, material handling, moisture, chemicals, or other hazards. Make sure to leave enough space around machine to disconnect power supply or apply a lockout/tagout device, if required.

Lighting

Lighting around the machine must be adequate enough that operations can be performed safely. Shadows, glare, or strobe effects that may distract or impede the operator must be eliminated.

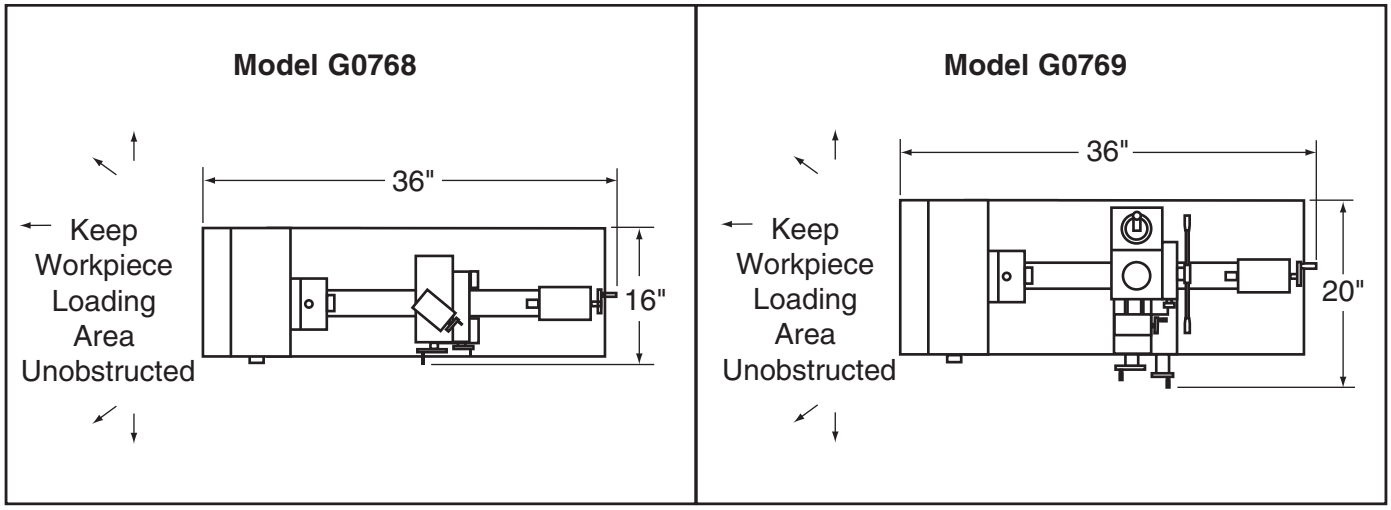
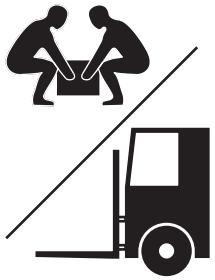


Figure 13. Minimum working clearances.

Lifting & Placing



⚠WARNING

HEAVY LIFT!

Straining or crushing injury may occur from improperly lifting machine or some of its parts. To reduce this risk, get help from other people and use a forklift (or other lifting equipment) rated for weight of this machine.

Do not attempt to lift or move the machine without using the proper lifting equipment (such as a forklift or crane) or the necessary assistance from other people. Refer to **Needed for Setup** on **Page 20** for details.

To lift and place machine:

1. Remove shipping crate top and sides, then remove chip pan, 4-jaw chuck, faceplate, and toolbox from shipping pallet.

2. Position chip pan on selected mounting surface and use it as a template to mark hole locations for mounting hardware (refer to **Leveling & Mounting** on **Page 25**).

   —If mounting machine to optional T26599 stand (see **Accessories** on **Page 68**), align holes in chip pan with pre-drilled mounting holes in stand.

3. Unbolt machine from shipping pallet.

⚠WARNING

Only use lifting slings and power lifting equipment rated for at least 300 lbs. and in good working condition. If machine falls or tips over while moving it, serious personal injury and property damage could result.

4. To balance load for lifting, move tailstock and carriage to extreme right end of bedway, then lock them in place.

   Note: *Before trying to move carriage, make sure carriage lock is loose and half nut is disengaged.*

5. Wrap lifting slings around bed and between leadscrew and bedway, as shown in **Figure 14**, to help prevent bending leadscrew during lifting.

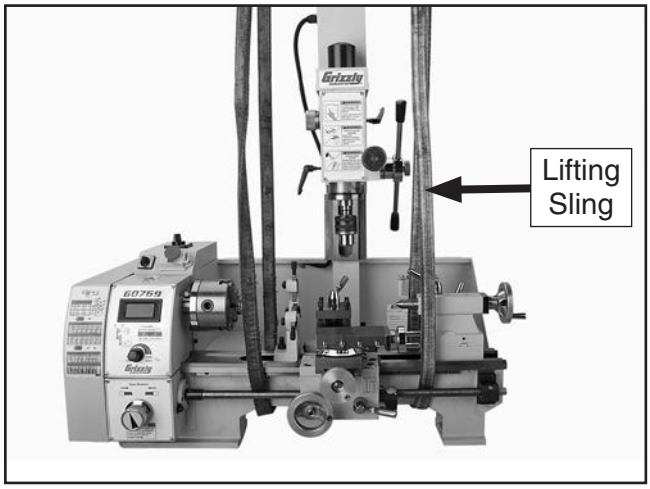


Figure 14. Example of lifting sling positions.

6. Attach lifting slings to forklift forks (or other power lifting equipment).

   Note: *To balance the load when lifting, the lifting strap closest to the headstock must be slightly shorter than the lifting strap on the tailstock side. If you are using lifting straps of equal length, this can be achieved by wrapping the lifting strap on the headstock side one or more times around the forklift fork, or by placing a block of wood on the fork to raise up the ends of the lifting strap.*

7. Have an assistant hold mill headstock to steady load, then lift machine just enough to clear any obstacles and move it to its mounting position.

8. Properly mount machine as instructed in **Mounting** subsection on **Page 25**.

Mounting

Number of Mounting Holes 2
Diameter of Mounting Hardware..... 5/16"

The chip pan and lathe base have holes that allow the machine to be mounted to the optional Model T26599 Stand (see **Figure 15**) or a workbench.

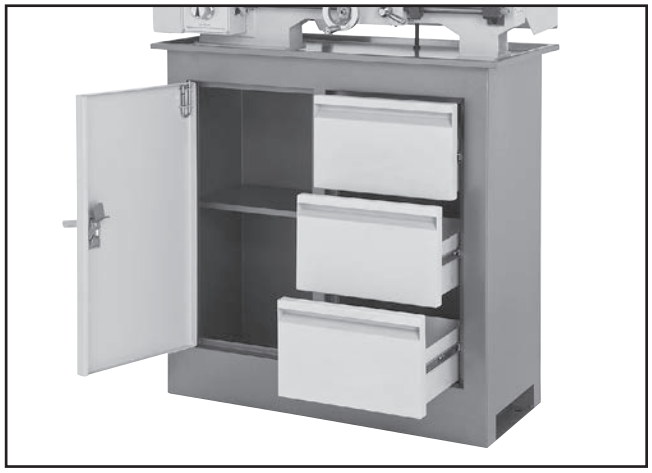


Figure 15. T26599 Stand for G0768/G0769.

The T26599 Stand is specifically designed for the G0768/G0769 and comes with pre-drilled mounting holes that match the base of these machines. You MUST mount your machine to a stand or workbench to prevent it from unexpectedly moving during operation, which could lead to personal injury or property damage.

Follow these guidelines when mounting your machine to ensure safe and accurate cutting results:

- Make sure stand or workbench can adequately support weight of machine and materials, and that it will not move or vibrate during operation.

- Use a silicon sealant between the machine base and chip pan to prevent coolant or other fluids from leaking through onto the stand, workbench, or floor.

  —If mounting machine to a stand, follow the instructions included with it. Ensure stand is anchored to floor.

  —If mounting machine to a workbench, drill holes all the way through workbench, and use hex bolts, washers, and hex nuts to secure machine in place (see example below).

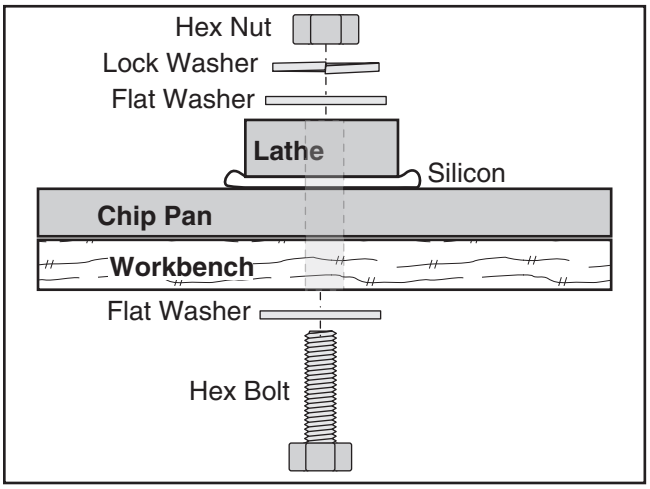


Figure 16. Example of a "Through Mount" setup.

Leveling

NOTICE

For accurate turning results and to prevent warping the cast iron bed and ways, the lathe bedways MUST be leveled from side-to-side and from front-to-back on both ends.

Recheck the bedways 24 hours after installation, two weeks after that, and then annually to make sure they remain level.

Leveling machinery helps precision components, such as bedways, remain straight and flat during the lifespan of the machine. The bed on a lathe that is not level may slowly twist due to the dynamic loads placed on the machine during operation.

For best results, use a precision level that is at least 12" long and sensitive enough to show a distinct movement when a 0.003" shim (approximately the thickness of one sheet of standard newspaper) is placed under one end of the level.

See **Figure 17** for an example of a high-precision level.

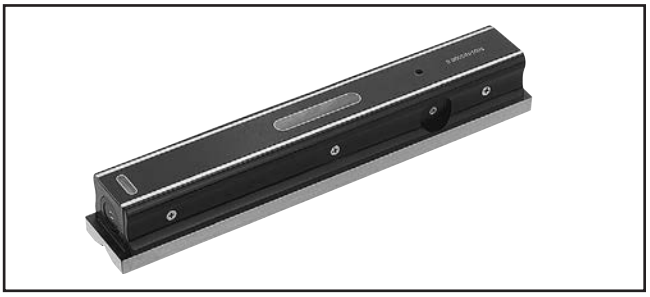


Figure 17. Grizzly Model H2683 12" Master Machinist's Level.

Assembly

With the exception of the handwheel handles, the lathe is shipped fully assembled.

Use a flat head screwdriver to attach the handwheel handles shown in **Figure 18**.

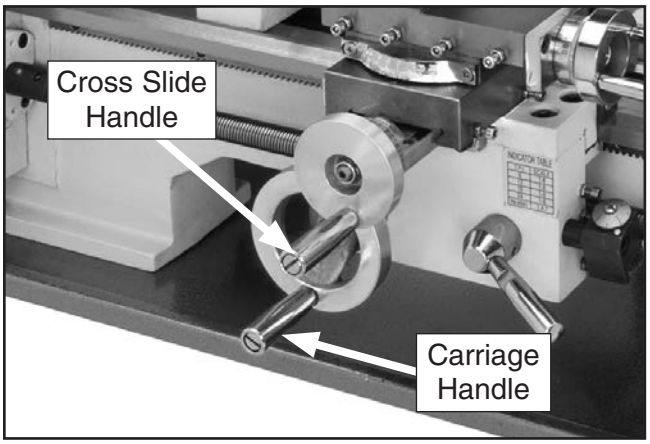


Figure 18. Handwheel handles installed.

Test Run

Once assembly is complete, test run the machine to ensure it is properly connected to power and safety components are functioning properly.

If you find an unusual problem during the test run, immediately stop the machine, disconnect it from power, and fix the problem BEFORE operating the machine again. The **Troubleshooting** table in the **SERVICE** section of this manual can help.

⚠WARNING

Serious injury or death can result from using this machine BEFORE understanding its controls and related safety information. DO NOT operate, or allow others to operate, machine until the information is understood.

⚠WARNING

DO NOT start machine until all preceding setup instructions have been performed. Operating an improperly set up machine may result in malfunction or unexpected results that can lead to serious injury, death, or machine/property damage.

To test run machine:

1. Make sure all tools and objects used during setup are cleared away from machine.

2. Press Emergency Stop button cover (see **Figure 19**) to prevent unexpected start up.

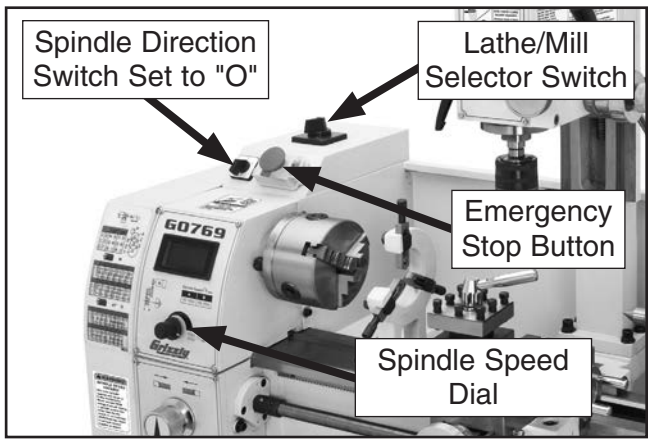


Figure 19. Headstock controls (G0769 shown).

3. Set spindle direction switch to neutral ("0" position), and rotate spindle speed dial all the way counterclockwise.

   G0769 Only: Set lathe/mill selector switch to "0" (see **Figure 19** on **Page on this page**).

4. Shift feed direction dial to neutral (see **Figure 20**).

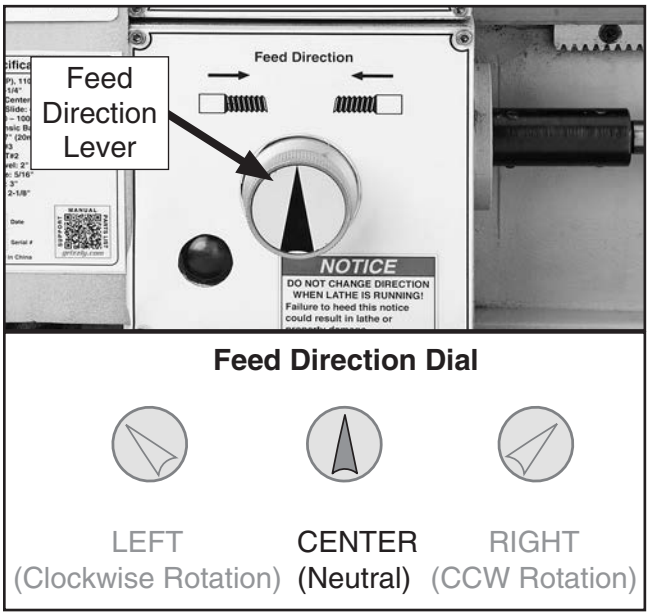


Figure 20. Neutral feed direction dial setting.

5. Make sure chuck and jaws, if installed, are secure (see **Chuck Installation** on **Page 32**).

   Note: *If a chuck is not installed on the lathe, you do not need to install one for this test run.*

6. Disengage half nut with lever shown in **Figure 21.**

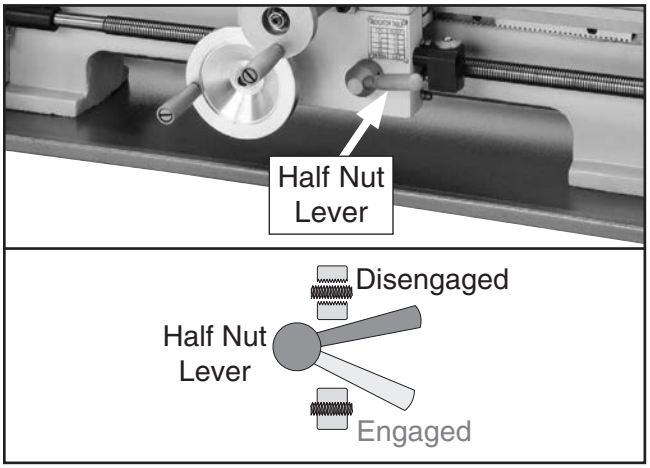


Figure 21. Half nut lever disengaged.

7. Connect machine to power. The spindle speed RPM display will illuminate.

8. Press tab in on side of Emergency Stop button and lift switch cover to reset it.

9. Turn spindle direction switch to "F" position.

   G0769 Only: Set lathe/mill selector switch to "1" for lathe mode.

10. Press green ON button, leaving switch cover open.

11. Slowly rotate spindle speed dial clockwise until spindle speed display shows 100 RPM. The spindle *should* rotate counterclockwise—down and toward front of lathe.

    The machine should run smoothly with little to no vibration or rubbing noises.

    —Strange or unusual noises should be investigated and corrected before operating machine further. Always disconnect machine from power when investigating or correcting potential problems.

12. Press Emergency Stop button to turn lathe ***OFF***. Then, without resetting Emergency Stop button, try to restart spindle rotation by rotating spindle speed dial all the way counterclockwise and then clockwise. The spindle *should not* start.

    —If the spindle *does* start with Emergency Stop button pressed in, the button is not operating correctly. This safety feature must operate properly before continuing operation. Turn spindle speed dial all the way counterclockwise to stop lathe, disconnect it from power, and call Tech Support for help.

    Model G0768: Congratulations! Test Run is complete! Now perform the **Spindle Break-In** procedure beginning on **Page 29**.

    Model G0769: Continue with remaining test run instructions.

13. Rotate spindle speed dial all the way counterclockwise.

14. Set lathe/mill selector switch to "2" for mill mode.

15. Rotate high/low gearbox knob to low "L" (see **Figure 22**).

    Note: *It may be necessary to rotate spindle by hand so gears will mesh.*

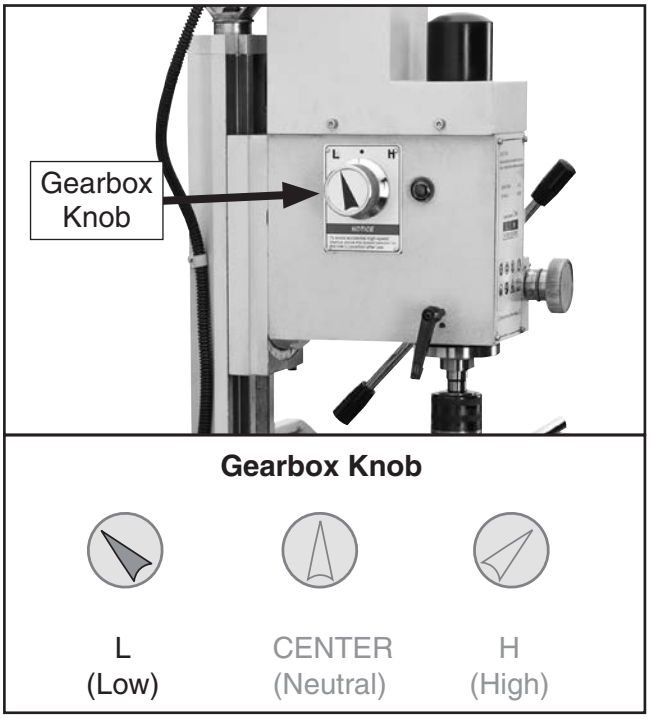


Figure 22. High/low gearbox knob set to low "L".

16. Reset Emergency Stop button.

17. Press green ON button.

18. Rotate spindle speed dial clockwise until spindle speed display shows 50 RPM.

19. Mill spindle *should* begin clockwise rotation (as viewed from top).

20. Press Emergency Stop button.

    Congratulations! Model G0769 test run is complete. Now perform the **Spindle Break-In** procedure.

Spindle Break-In

The spindle break-in procedure distributes lubrication throughout the bearings to reduce the risk of early bearing failure if there are any "dry" spots or areas where lubrication has settled in the bearings. You ***must*** complete this procedure ***before*** placing operational loads on the spindle for the first time when the machine is new or if it has been sitting idle for longer than 6 months.

Always start the spindle break-in at the lowest speed to minimize wear if there *are* dry spots. Allow the spindle to run long enough to warm up and distribute the bearing grease, then incrementally increase spindle speeds and repeat this process at each speed until reaching the maximum spindle speed. Following the break-in procedure in this progressive manner helps minimize any potential wear that could occur before lubrication is fully distributed.

NOTICE

You must complete this procedure to maintain the warranty. Failure to do this could cause rapid wear-and-tear of spindle bearings once they are placed under load.

Lathe Spindle Break-In

1. Successfully complete **Test Run** procedure beginning on **Page 27**.

2. Reset Emergency Stop button.

   G0769 Only: Set lathe/mill selector switch to "1" for lathe mode.

3. Press green ON button.

4. Rotate spindle speed dial until spindle speed display shows 50 RPM and run lathe for minimum of 10 minutes.

5. Without stopping lathe, use spindle speed dial to run lathe at 1000 and 2000 RPM for 10 minutes each.

   Note: *If necessary, refer to **Setting Spindle Speed** on **Page 47** for detailed instructions.*

6. Rotate spindle speed dial all the way counterclockwise, then press Emergency Stop button.

7. Set spindle direction switch to "R", then reset Emergency Stop button.

8. Press ON button.

9. Rotate spindle speed dial to 2000 RPM and run lathe for 10 minutes.

10. Rotate spindle speed dial all the way counterclockwise, then press Emergency Stop button.

Congratulations! Lathe spindle break-in is complete.

Mill Spindle Break-In (G0769 Only)

1. Successfully complete **Lathe Spindle Break-In**.

2. Set spindle direction switch to "F".

3. Set lathe/mill selector switch to "2" for mill mode.

4. Rotate high/low gearbox knob to low "L."

5. Reset Emergency Stop button.

6. Press ON button.

7. Rotate spindle speed dial clockwise to 50 RPM and run spindle for a minimum of 10 minutes.

8. Rotate spindle speed dial all the way counterclockwise.

9. Press Emergency Stop button.

10. Rotate high/low gearbox knob to high "H".

11. Reset Emergency Stop button.

12. Press ON button.

13. Use spindle speed dial to run mill at 1000 and 2000 RPM for 10 minutes each.

14. Rotate spindle speed dial all the way counterclockwise, then press Emergency Stop button.

15. Repeat **Steps 7–10** from **Lathe Spindle Break-In** in a similar manner for mill.

Congratulations! Mill spindle break-in is complete.

Recommended Adjustments

The following adjustments have been made at the factory. However, because of the many variables involved with shipping, we recommend you verify these adjustments to ensure the best results:

Factory adjustments that should be verified:

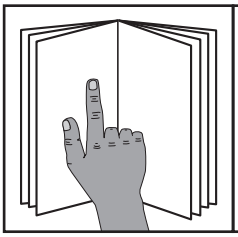
- Tailstock alignment ..... **Page 39**
- Cross slide backlash adjustment.....**Page 82**
- Leadscrew backlash.....**Page 82**
- Gib adjustments ..... **Page 83**

SECTION 4: LATHE OPERATIONS

Operation Overview

The purpose of this overview is to provide the novice machine operator with a basic understanding of how the machine is used during operation, so the machine controls/components discussed later in this manual are easier to understand.

Due to the generic nature of this overview, it is **not** intended to be an instructional guide. To learn more about specific operations, read this entire manual and seek additional training from experienced machine operators, and do additional research outside of this manual by reading "how-to" books, trade magazines, or websites.

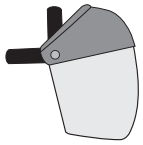


WARNING

To reduce your risk of serious injury, read this entire manual BEFORE using machine.

WARNING

To reduce risk of eye or face injury from flying chips, always wear approved safety glasses and face shield when operating this machine.



NOTICE

If you are not experienced with this type of machine, WE STRONGLY RECOMMEND that you seek additional training outside of this manual. Read books/magazines or get formal training before beginning any projects. Regardless of the content in this section, Grizzly Industrial will not be held liable for accidents caused by lack of training.

To complete a typical lathe operation, the operator does the following:

1. Securely mounts workpiece in lathe.
2. Puts on safety glasses and a face shield, rolls up sleeves, removes jewelry, and secures any clothing, jewelry, or hair that could get entangled in moving parts.
3. Installs tooling on toolpost, then backs it away to establish a safe startup clearance.
4. Removes all setup tools from lathe.
5. Checks for safe clearances by rotating workpiece by hand at least one full revolution.
6. Moves slides to where they will be used during operation.
7. If using power feed, selects appropriate feed rate and direction.
8. Resets Emergency Stop button and turns spindle direction switch to "F".
9. Presses ON button and rotates spindle speed dial to set correct spindle speed.
10. Uses carriage handwheels or power feed options to move tooling into workpiece for operations.
11. When finished turning, rotates spindle speed dial completely counterclockwise, presses Emergency Stop button, then removes workpiece.

Chuck & Faceplate Mounting

This lathe is equipped with an intrinsic backplate spindle nose. With this type of spindle, a chuck or faceplate is mounted directly to the backplate with hex nuts.

⚠WARNING

Never use spindle speeds faster than chuck RPM rating or safe limits of your workpiece. Excessive spindle speeds greatly increase risk of workpiece or chuck being thrown from machine with deadly force!

This lathe ships with the 3-jaw chuck installed. This is a scroll-type chuck where all three jaws move in unison when the chuck key is used.

The included faceplate has slots for T-bolts that hold standard or custom clamping hardware. With the correct clamping hardware, a faceplate offers a wide range of uses, including machining non-concentric workpieces, straight turning between centers, off-center turning, and boring.

Installation & Removal Device

Place a piece of plywood over the bedways to protect them from damage if a chuck or other tooling is dropped (see below).

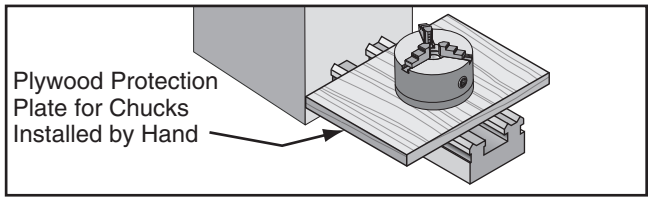


Figure 23. Example of common device used during chuck installation and removal.

Chuck Installation

To ensure accurate work, it is extremely important to make sure the spindle nose and chuck mating surfaces are clean. Even a small amount of lint or debris can affect accuracy.

The chuck is properly installed when it is seated against the backplate shoulder (see **Figure 24**).

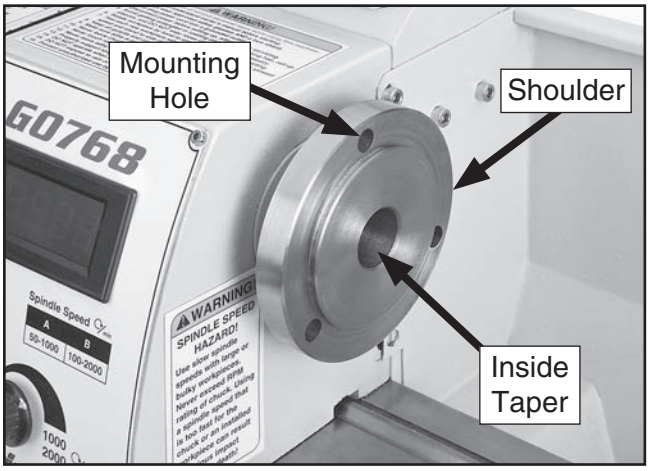


Figure 24. Spindle backplate parts.

Tools Needed:	**Qty**
Open-End Wrench 13mm	1
Lathe Chuck Key	1

To install chuck:

1. DISCONNECT MACHINE FROM POWER!

2. Use an appropriate device to protect ways (refer to **Installation & Removal Device** subsection).

3. Thoroughly clean and wipe down all mating surfaces with a lightly-oiled, lint-free rag.

4. Insert chuck screws through mounting holes in spindle backplate, as shown in **Figure 25**. Make sure chuck seats firmly and evenly against backplate shoulder.

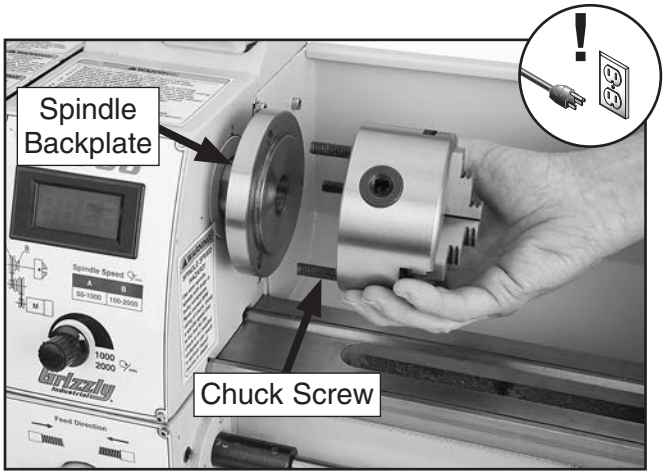


Figure 25. Inserting chuck into backplate.

5. Use a lock washer and hex nut on each chuck screw to secure chuck (see **Figure 26**). Tighten hex nuts evenly a small amount at a time and in multiple steps.

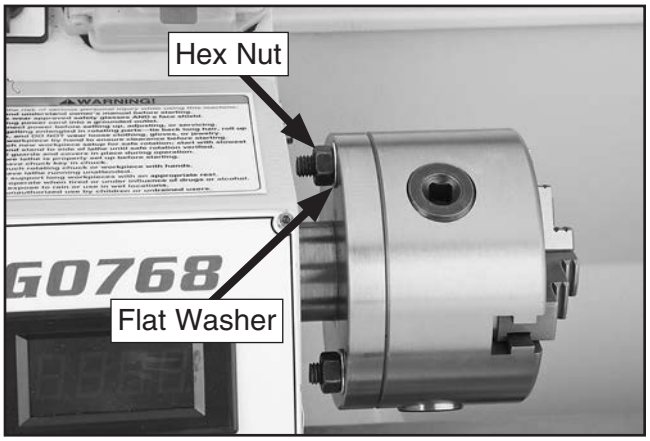


Figure 26. Chuck secured against backplate.

Scroll Chuck Clamping

This 3-jaw, scroll-type chuck has an internal scroll-gear that moves all jaws in unison when adjusted with the chuck key. This chuck holds cylindrical parts on-center with the axis of spindle rotation and can be rotated at high speeds if the workpiece is properly clamped and balanced.

Never mix jaw types or positions to accommodate an odd-shaped workpiece. The chuck will spin out of balance and may throw the workpiece! Instead, use an independent jaw chuck or a faceplate.

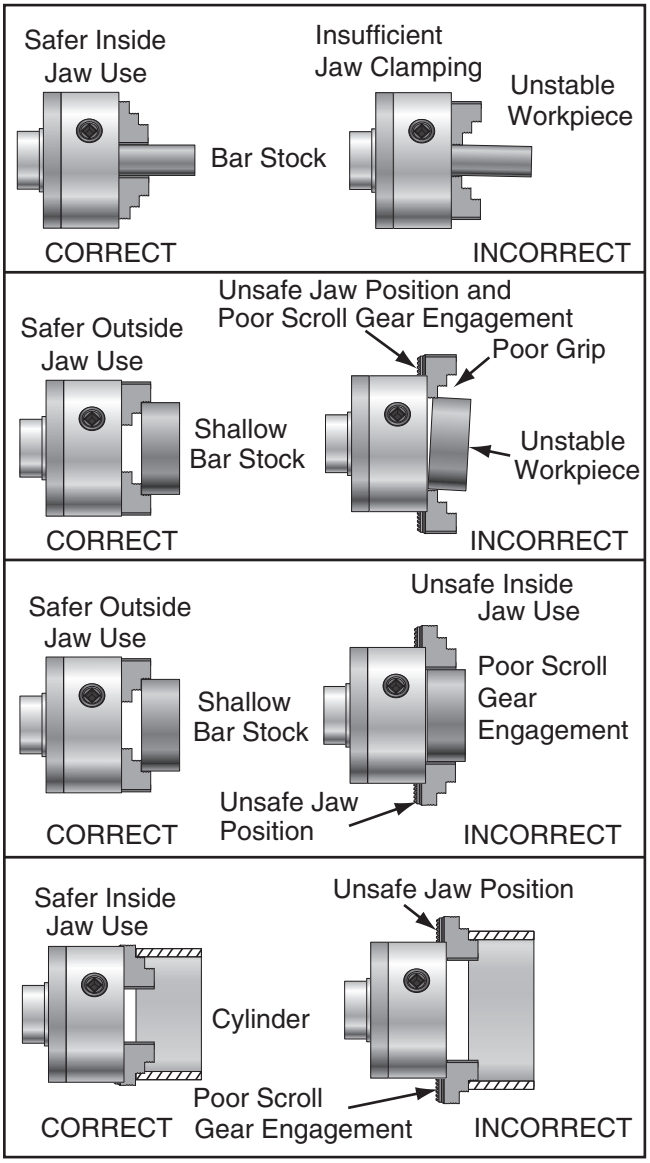


Figure 27. Jaw selection and workpiece holding.

Changing Jaw Set

The 3-jaw scroll chuck included with the lathe features inside and outside hardened steel jaw sets (see **Figure** below), which move in unison to center a concentric workpiece.

When installing the jaws, it is important to make sure they are installed correctly. Incorrect installation will result in jaws that do not converge evenly and are unable to securely clamp a workpiece.

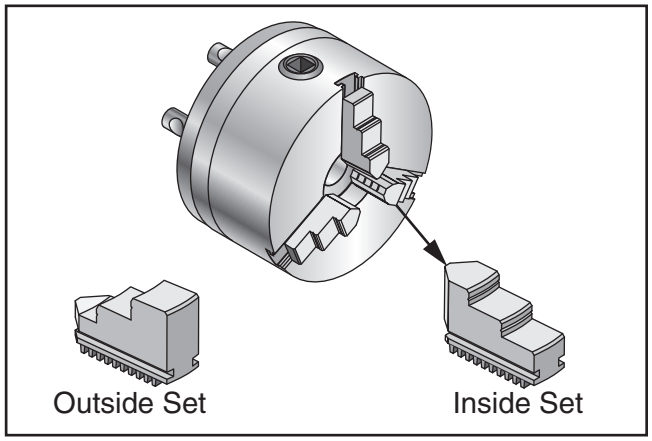


Figure 28. Chuck and jaw selection.

Jaws are numbered from 1–3 (see **Figure** below). The number is typically stamped on the side or bottom. Jaws are designed to be installed counterclockwise in numerical order in the matching numbered jaw guides, so they will hold a concentric workpiece evenly.

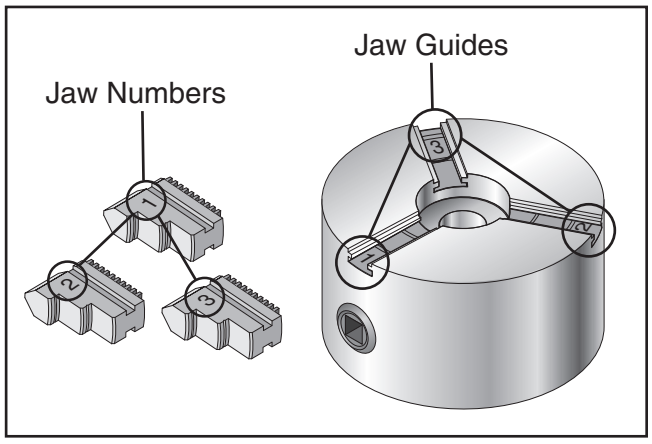


Figure 29. Jaw guide and jaw numbers.

To change jaw set:

1. DISCONNECT MACHINE FROM POWER!

2. Use appropriate device to protect ways (refer to **Installation & Removal Device** subsection).

3. Insert chuck key and turn it counterclockwise to back jaws out and remove them individually in descending order (i.e., 3, 2, 1).

4. Use mineral spirits to clean debris and grime from jaws and chuck jaw guides.

5. Apply thin coat of NLGI #2 grease to surfaces of removed jaw set. Store in safe place free from moisture and abrasives.

6. Rotate chuck key clockwise until you see tip of outer scroll-gear lead thread about to enter a jaw guide (see below).

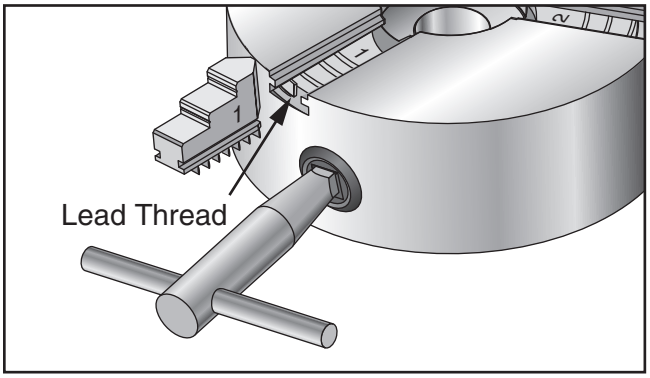


Figure 30. Lead thread on scroll gear.

7. Insert jaw #1 into jaw guide #1 and hold jaw against scroll-gear.

8. Rotate chuck key clockwise one turn to engage tip of scroll-gear lead thread into jaw. Pull jaw; it should be locked into jaw guide.

9. Install remaining jaws in numerical order, in the same manner. The jaws should converge evenly at center of chuck.

   —If jaws do not converge evenly, remove them. Check that jaw numbers and jaw guides match. Re-install jaws sequentially 1–3, making sure each one engages with scroll-gear lead thread during its first rotation.

4-Jaw Chuck

Refer to the **Chuck Installation** subsection for instructions on installing the 4-jaw chuck.

The 4-jaw chuck features independently adjustable jaws for holding non-concentric or off-center workpieces. Each jaw can be independently removed from the chuck body and reversed for a wide range of work holding versatility.

⚠WARNING

Because of dynamic forces involved in machining a non-concentric or off-center workpiece, always use a low spindle speed to reduce risk of workpiece coming loose and being thrown from lathe, which could cause death or serious personal injury.

Mounting Workpiece

1. DISCONNECT MACHINE FROM POWER!

2. Use an appropriate device to protect ways (refer to **Installation & Removal Device** subsection).

3. Use chuck key to open each jaw so workpiece will fit into spindle opening and lay flat against chuck face and jaw steps.

4. With help from another person or a holding device, position workpiece so it is centered in chuck.

5. Tighten each jaw in small increments. After tightening first jaw, continue tightening remaining jaws in an opposing sequence, similar to sequential order shown below.

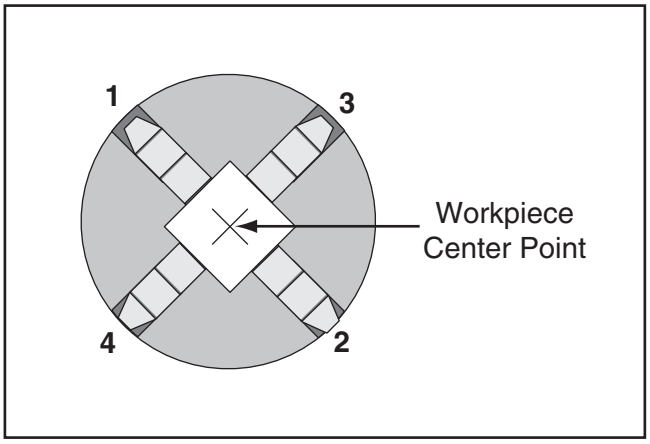


Figure 31. 4-jaw chuck tightening sequence.

6. After workpiece is secured by jaws, use dial indicator to make sure workpiece is centered in chuck.

   —If workpiece is not correctly centered, make fine adjustments by slightly loosening one jaw and tightening opposing jaw until workpiece is correctly positioned (see below for an example).

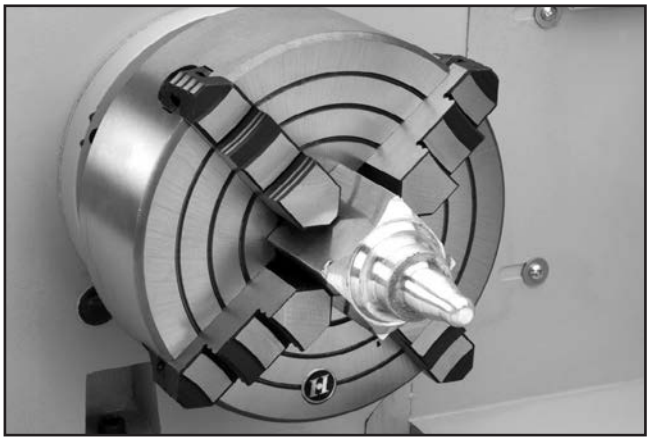


Figure 32. Example of a non-cylindrical workpiece correctly positioned on a 4-jaw chuck.

Faceplate

Refer to the prior **Chuck Installation** subsection for instructions on installing the faceplate.

The faceplate included with your lathe can be used for a wide range of operations, including machining non-concentric workpieces, straight turning between centers, off-center turning, and boring.

The tools needed for mounting a workpiece will vary depending on the type of setup you have.

⚠WARNING

Machining non-concentric workpieces at high speeds could cause workpiece to be thrown from lathe with deadly force. To reduce this risk, use a low RPM, and use counter-weights to balance faceplate or workpiece.

⚠WARNING

Failure to properly secure workpiece to faceplate could cause workpiece to be thrown from lathe with deadly force. To reduce this risk, use a minimum of THREE independent clamping devices to hold workpiece onto faceplate.

To mount non-concentric workpiece to faceplate:

1. DISCONNECT MACHINE FROM POWER!

2. Use appropriate device to protect ways (refer to **Chuck Safety & Support Devices** subsection).

3. With help from another person or holding device to support workpiece, position it onto faceplate and clamp it in place with a minimum of three independent clamping devices (see below for an example).

   Be sure to take into account rotational and cutting forces that will be applied to workpiece when clamping it to faceplate. If necessary, use counter-weights to balance assembly and use a dial indicator to make sure workpiece is properly positioned for your operation.

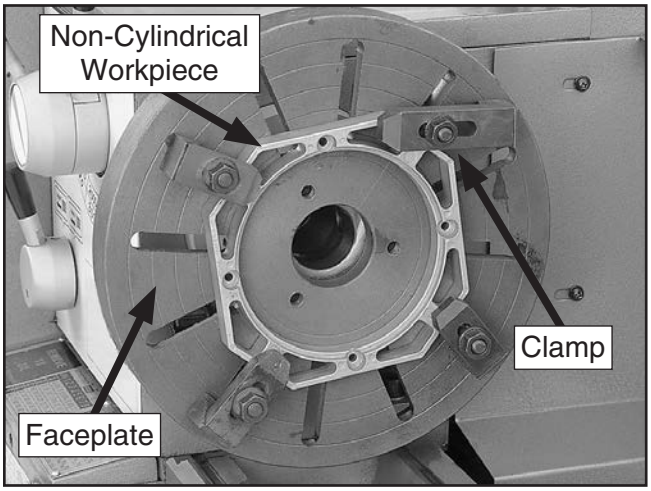


Figure 33. Example of a workpiece clamped in a faceplate.

Tailstock

The tailstock is typically used to support long workpieces at the side opposite the spindle, using a live or dead center. It can also hold a tapered drill bit (or a drill chuck with a regular drill bit) for boring holes. Unlike boring done with a drill press where the workpiece is fixed and the drill bit rotates, the drill bit in a tailstock remains stationary while the workpiece is rotated by the spindle.

The entire tailstock can be repositioned and locked in place along the length of the bed. An independently controlled offset adjustment allows the upper part of the tailstock to move perpendicular to the bedways so it can be aligned with the spindle center (for concentric turning) or offset from the spindle center (for tapered turning).

The tailstock quill also features independent adjustment controls that allow it to be advanced toward the spindle or locked firmly in position.

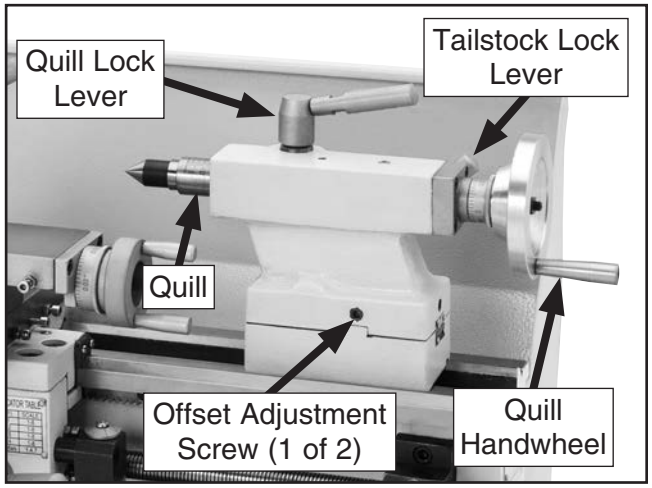


Figure 34. Tailstock controls and features.

Tailstock Quill Specs

Graduated Dial on Handwheel

Increments	0.001"
One Full Revolution	0.04"

Increments on Quill Scale

Inch	0"–2" in 1/8" Increments
Metric	0–50mm in 1mm Increments

Positioning Tailstock

1. Rotate tailstock lock lever clockwise (facing machine) to unlock tailstock from bedways.

2. Slide tailstock to desired position by pushing it along the bedways.

3. Rotate tailstock lock lever counterclockwise to lock tailstock against bedways.

Using Quill

1. Rotate quill lock lever counterclockwise to loosen quill.

2. Turn quill handwheel clockwise to move quill toward spindle or counterclockwise to move it away from spindle.

3. Rotate quill lock lever clockwise to secure quill.

Installing Tooling

The tailstock quill accepts MT#2 tapered arbors (see the **Figures** below for examples).

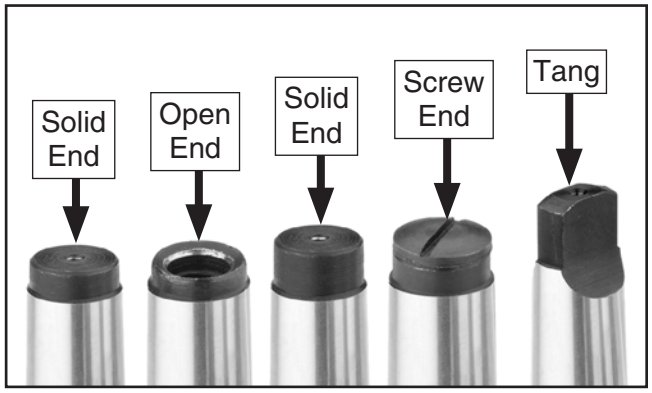


Figure 35. Types of tapered arbors and tooling.

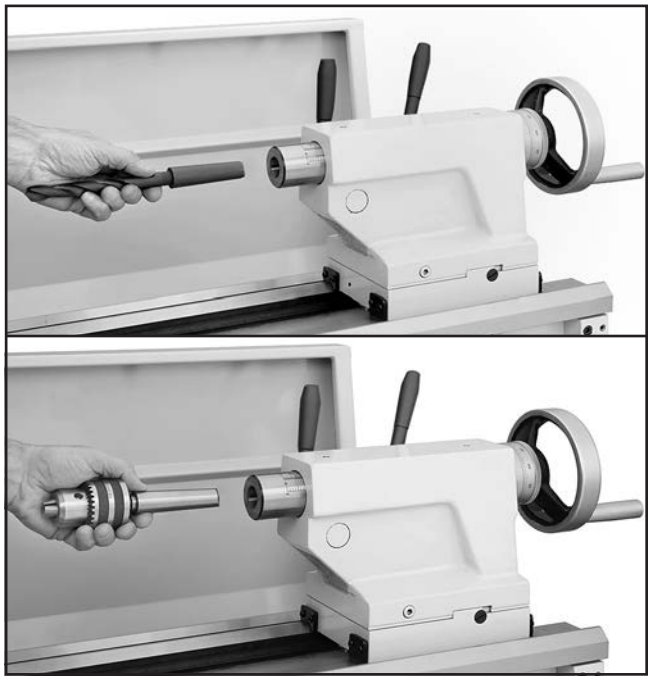


Figure 36. Example photos of inserting tools into the tailstock.

Note: *If the tooling has an open hole in the end, then a screw can be threaded into the end of the tool to provide a solid surface for the quill pin to push against when the quill is retracted for tool removal. Otherwise, removal of such tooling may be difficult.*

To install tooling in tailstock:

1. With tailstock locked in place, unlock quill, then use handwheel to extend it approximately 1".

2. Thoroughly clean and dry tapered mating surfaces of quill and center, making sure no lint or oil remains on tapers.

3. With a firm and quick motion, insert tool into quill. Check to see if it is firmly seated by attempting to twist it—a firmly seated tool will not twist.

4. Unlock tailstock and move it until tip of tool is close to, but not touching, workpiece, then lock tailstock.

5. Start spindle rotation, unlock quill lock lever, then turn quill handwheel clockwise to feed tool into workpiece.

Removing Tooling

1. Use shop rag to hold tool.

2. Rotate quill handwheel counterclockwise to fully retract quill into tailstock until tool is forced out of quill.

Offsetting Tailstock

The tailstock quill can be offset from the spindle centerline for turning tapers. Offsetting quill toward the front of the lathe results in a taper at the tailstock end. Conversely, offsetting quill toward the back of the lathe results in a taper at the spindle end.

Note: *The marks on the offset indicator are arbitrary. For a precise offset, use a dial indicator to check quill movement while adjusting the screws.*

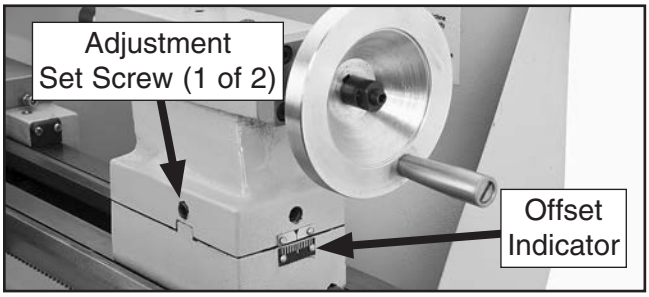


Figure 37. Left offset adjustment.

Tools Needed **Qty**
Hex Wrench 4mm..... 1

To offset tailstock:

1. Loosen tailstock lock to release clamping pressure on top and bottom castings.

2. Rotate adjustment set screws in opposite directions for desired offset (see below).

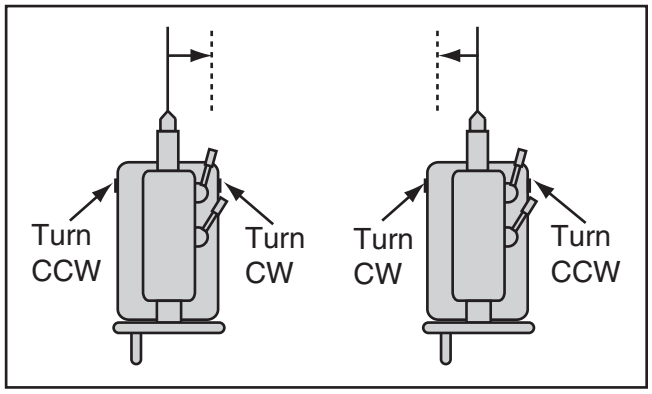


Figure 38. Example of set screw adjustment in relation to tailstock movement.

3. Tighten tailstock lock to secure the offset.

Aligning Tailstock to Spindle Centerline

This is an essential adjustment that should be verified or performed each time the tailstock is used to turn concentric workpieces between centers or immediately after offsetting the tailstock when turning a taper. If the tailstock is not aligned with the spindle centerline when it is supposed to be, turning results will be inaccurate along the length of the workpiece.

Items Needed **Qty**
Hex Wrench 4mm..... 1
Round Stock 2" x 6" 2

To align tailstock to spindle centerline:

1. Center drill both ends of one piece of round stock, then set it aside for use in **Step 5**.

2. Use another piece of round stock to make a dead center, and turn it to a 60° point, as illustrated below.

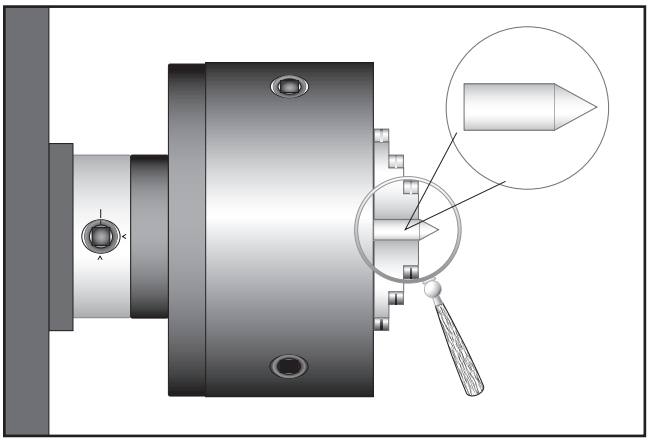


Figure 39. Turning a dead center.

Note: *As long as this dead center remains in the chuck, the point of the center will remain true to the spindle centerline. The point will have to be refinished whenever the center is removed and then returned to the chuck.*

3. Install center in tailstock.

4. Attach a lathe dog to the test stock from **Step 1**, then mount it between centers, as shown below.

Figure 40. Example of stock mounted between the centers.

5. Turn 0.010" off stock diameter.

6. Mount a test or dial indicator so plunger is on tailstock quill.

7. Use calipers to measure both ends of the workpiece.

—If test stock is *thicker* at tailstock end, move tailstock toward *front* of lathe ½ the distance of the amount of taper, as shown below.

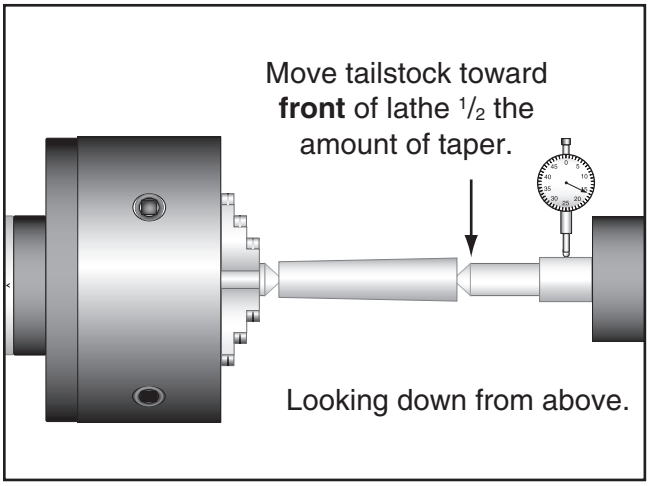


Figure 41. Adjust tailstock toward the operator.

—If test stock is *thinner* at tailstock end, move tailstock toward *back* of lathe ½ the distance of taper amount, as shown below.

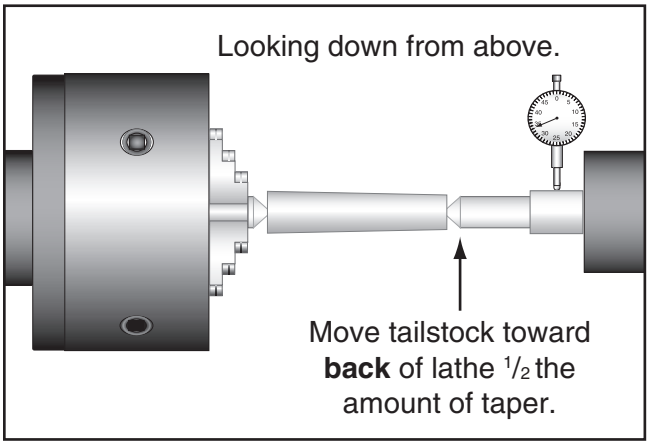


Figure 42. Adjust tailstock away from operator.

8. Repeat **Steps 5–7** until desired accuracy is achieved.

Centers

Figure 43 shows the MT#2 and MT#3 dead centers included with the lathe.

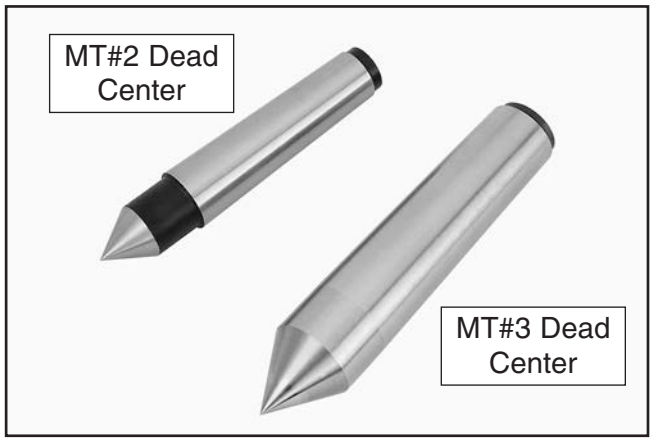


Figure 43. Dead centers.

Dead Centers

Dead centers are one-piece, high-speed steel centers that require low spindle speeds and a small amount of oil to reduce friction heat that may damage the workpiece.

Mount the MT#2 dead center (see **Figure 43**) in the tailstock. Since the workpiece will rotate against the center and generate friction, the tip of the center must be lubricated to avoid premature wear and maximize smooth operation.

Mount the MT#3 dead center (see **Figure 43**) in the spindle for operations where the workpiece rotates with the center and does not generate friction.

Mounting Dead Center in Spindle

1. DISCONNECT MACHINE FROM POWER!

2. Thoroughly clean and dry all mating surfaces of spindle bore and center, making sure that no lint or oil remains on these surfaces.

3. Mount chuck or faceplate onto spindle, whichever is correct for your operation.

4. Insert MT#3 center into spindle bore through chuck or faceplate.

   Below is an example photo of a dead center installed in spindle, using a lathe dog and faceplate for turning between centers.

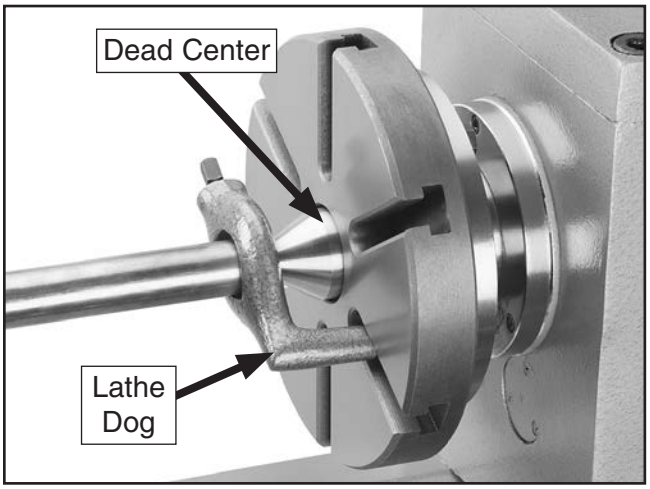


Figure 44. Example of using a dead center with a faceplate and lathe dog.

Removing Center from Spindle

To remove the center from the spindle, insert a piece of round bar stock (or similar tool) through the outside end of the spindle. Hold onto the center with a gloved hand or shop rag, then tap the bar stock to knock the center loose.

Mounting Center in Tailstock

The included #2 dead center or a live center (not included) can be used in the tailstock. Mounting instructions are the same for both. The **Figure** below shows an example photo of a dead center mounted in a tailstock.

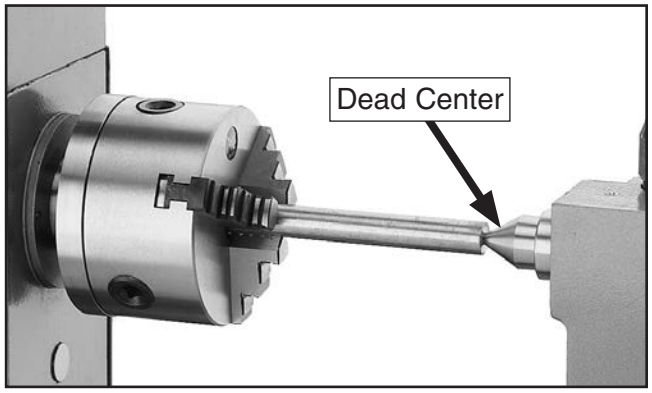


Figure 45. Example of using dead center installed in the tailstock.

To mount center in tailstock:

1. DISCONNECT MACHINE FROM POWER!

2. Thoroughly clean and dry tapered mating surfaces of tailstock quill bore and center, making sure no lint or oil remains on tapers.

3. Use quill handwheel to feed quill out from casting approximately 1".

   Note: *The maximum quill travel is 2", but we do not recommend extending the quill more than 1" or stability and accuracy will be reduced.*

4. Insert center into tailstock quill.

5. Seat center firmly into quill during workpiece installation by rotating quill handwheel clockwise to apply pressure with center engaged in center hole of workpiece.

   Note: *Only apply enough pressure with tailstock quill to securely mount workpiece between centers. Avoid overtightening center against workpiece, or it may become difficult to remove later, and it will result in excessive friction and heat, which may damage workpiece and center.*

Removing Center from Tailstock

To remove the center from the quill, hold onto it with a gloved hand or shop rag, then rotate the quill handwheel counterclockwise to draw the quill back into the casting until the center releases.

Mounting Workpiece Between Centers

1. DISCONNECT MACHINE FROM POWER!

2. Drill center holes in both ends of workpiece.

3. Install MT#3 dead center in spindle with lathe dog and chuck or faceplate, then install live center or MT#2 dead center in tailstock.

4. Lubricate MT#2 dead center point and workpiece center holes, then mount workpiece between centers and hold it in place with light pressure from tailstock center.

NOTICE

To avoid premature wear of dead center or damage to workpiece, use low spindle speeds and keep tip of dead center mounted in tailstock well lubricated.

5. Seat center firmly into quill by rotating quill handwheel clockwise to apply pressure against workpiece (see example below).

Figure 46. Example photo of a workpiece mounted between two centers.

Note: *Only apply enough pressure to securely mount the workpiece between centers. Avoid over-tightening the center against the workpiece, or it may become difficult to remove later. Also, over-tightening will result in excessive friction and heat, which may damage the workpiece or center.*

Steady Rest

The steady rest supports long shafts and can be mounted anywhere along the length of the bedway. Familiarize yourself with the steady rest components shown below to better understand the controls before using it.

Tools Needed for Installation/Removal	Qty
Open-End Wrench 13mm	1
Open-End Wrench 14mm	1

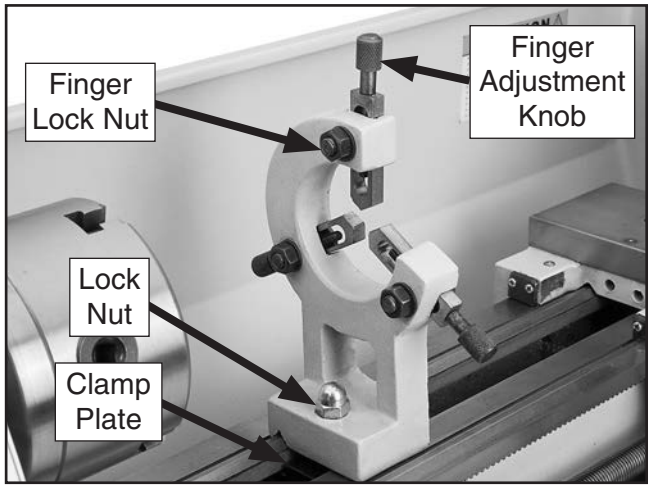


Figure 47. Steady rest components.

To install and use steady rest:

1. DISCONNECT MACHINE FROM POWER!
2. Thoroughly clean all mating surfaces.
3. Place steady rest base on bedways and secure with clamp plate, hex bolt, and lock nut.
4. Loosen finger lock nuts (see **Figure 47**), turn finger adjustment knobs, and adjust fingers as required for workpiece.
5. Loosen steady rest lock nut, position steady rest where required to properly support workpiece, then secure lock nut.
6. Turn finger adjustment knobs so fingers are barely touching workpiece, then tighten finger lock nuts.
7. Lubricate finger tips with an anti-seize lubricant during operation. **Note:** *Mill or file the tips if they show wear.*

Follow Rest

The follow rest mounts to the saddle and supports the workpiece near the cutting tool to prevent deflection from the pressure of the cutting tool. The follow rest fingers adjust in the same manner as the fingers on the steady rest.

Tip: *To reduce the effects of friction, lubricate the finger tips with generous amounts of anti-sieze lubricant during operation.*

Tool Needed	Qty
Hex Wrench 4mm	1

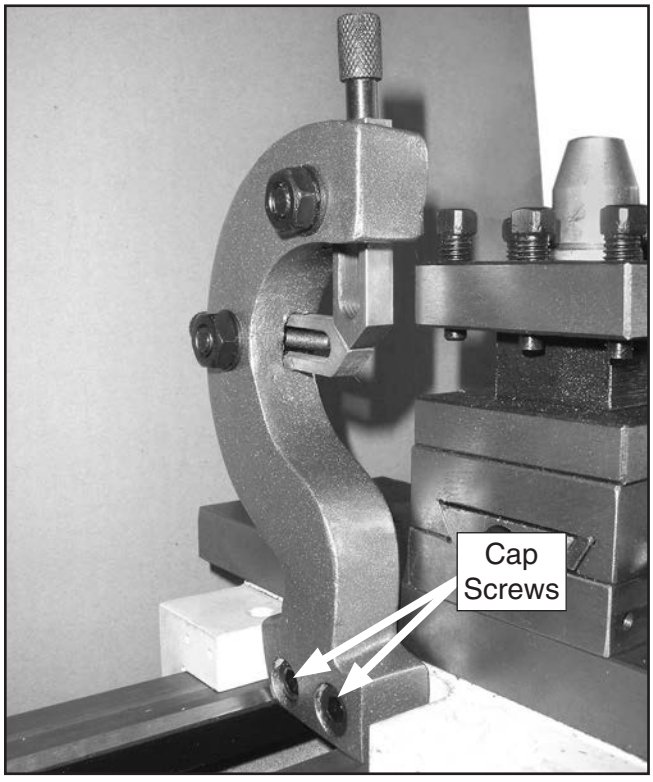


Figure 48. Follow rest attachment.

Compound Rest

The compound rest handwheel has an indirect-read graduated scale. This means that the distance shown on the scale represents the actual distance the cutting tool moves. The base of the compound rest has another graduated scale used for setting the cutting tool to a specific angle.

Graduated Dial
Increments..... 0.001" (0.025mm)
One Full Revolution..... 0.05" (1.27mm)

Tool Needed	Qty
Hex Wrench 4mm	1

To set compound rest angle:

1. Loosen cap screws shown in **Figure 49**.

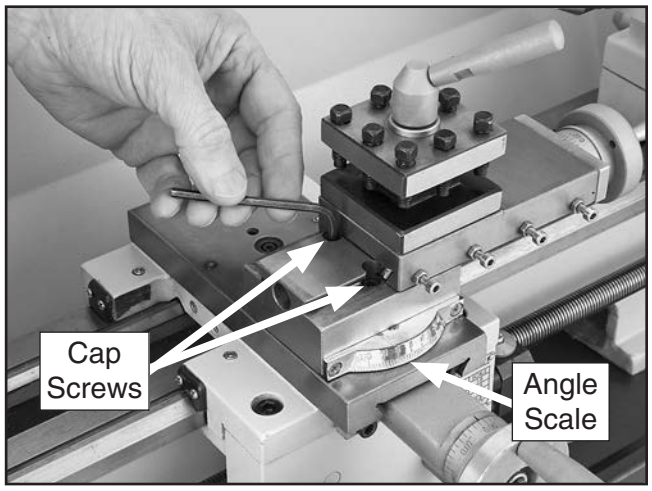


Figure 49. Compound rest angle adjustments.

2. Rotate rest to desired angle, as indicated by scale at base, then retighten cap screws.

   Tip: *The first time you set the compound rest angle for cutting threads, mark the location on the cross slide as a quick reference point. This will allow you to quickly return the compound rest to that exact angle the next time you need to cut threads.*

Four-Way Tool Post

The four-way tool post is mounted on top of the compound rest and allows a maximum of four tools to be loaded simultaneously.

Each tool can be quickly indexed to the workpiece by loosening the top handle, rotating the tool post to the desired position, then retightening the handle to lock the tool into position.

Installing Tool

Tool Needed	Qty
Tool Post T-Wrench	1

To install tool in tool post:

1. Adjust tool post bolts so cutting tool can fit underneath them (see below).

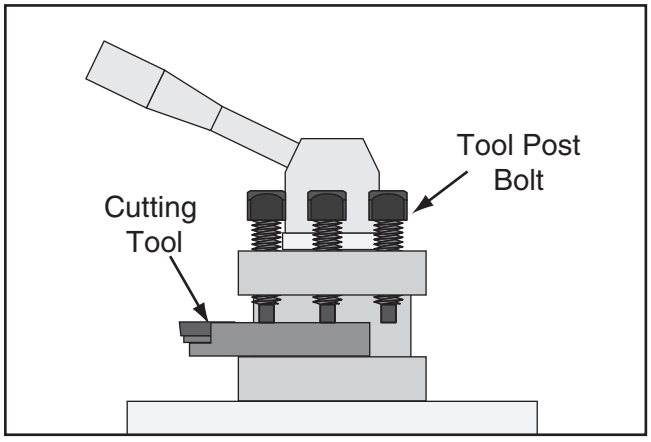


Figure 50. Example of tool mounted in tool post.

⚠WARNING

Over-extending a cutting tool from the post will increase risk of tool chatter, breakage, or tool loosening during operation, which could cause metal pieces to be thrown at the operator or bystanders with great force. DO NOT extend a cutting tool more than 2.5 times the width of its cross-section (e.g., 2.5 x 0.5" = 1.25").

2. Firmly secure cutting tool with at least two tool post bolts.

3. Check and adjust cutting tool to spindle centerline, as instructed in next subsection.

Aligning Cutting Tool with Spindle Centerline

For most operations, the cutting tool tip should be aligned with the spindle centerline, as illustrated below.

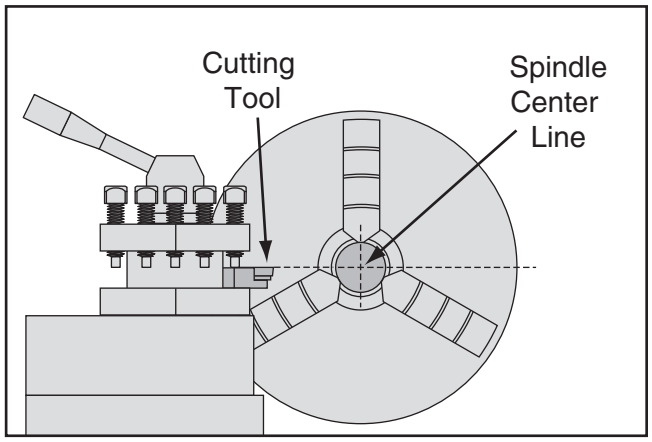


Figure 51. Cutting tool aligned with spindle centerline (viewed from tailstock).

There are a number of ways to check and align the cutting tool to the spindle centerline. If necessary, you can raise the cutting tool by placing steel shims underneath it. The shims should be as long and as wide as the cutting tool to properly support it.

Below are two common methods:

- Move the tailstock center over the cross slide and use a fine ruler to measure the distance from the surface of the cross slide to the tip of the center. Adjust the cutting tool height so it is the same distance above the cross slide as the tailstock center.

- Align the tip of the cutting tool with a tailstock center, as instructed in the following procedure. For this to work, the tailstock must be aligned to the spindle centerline (refer to **Aligning Tailstock To Spindle Centerline** in this manual for detailed instructions).

Tools Needed	**Qty**
Tool Post T-Wrench	1
Steel Shims	As Needed
Cutting Tool	1
Tailstock Center	1

To align cutting tool with tailstock center:

1. Mount cutting tool in tool post, then secure post so tool faces tailstock.

2. Install center in tailstock, and position center tip near cutting tool tip.

3. Lock tailstock and quill in place.

4. Adjust height of cutting tool so tool tip is aligned vertically with center tip, as illustrated below.

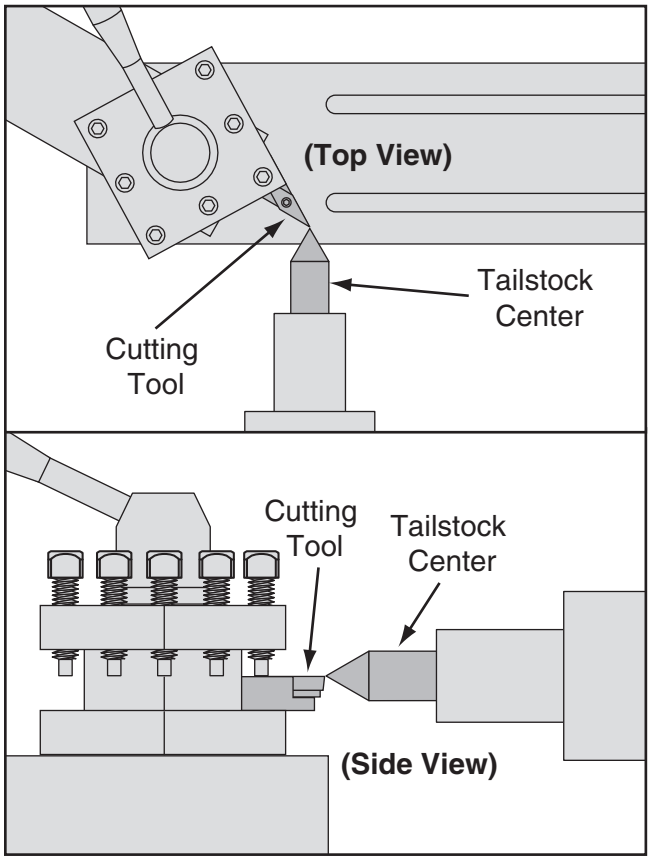


Figure 52. Cutting tool aligned to the tailstock center.

Manual Feed

The cutting tool can be manually fed into the workpiece using the carriage, cross slide, and compound rest handwheels shown below.

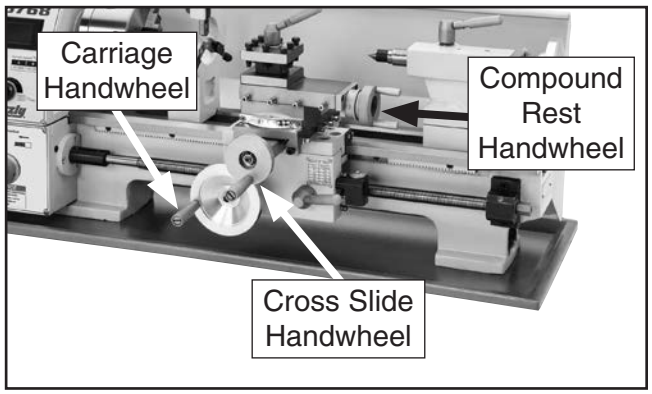


Figure 53. Manual feeding controls.

Carriage Handwheel

Graduated Dial

Increments ..... 0.01" (0.25mm)
One Full Revolution ..... 1" (25.4mm)

Use the carriage handwheel to move the carriage left or right along the bed. Adjust the position of the graduated scale by holding the handwheel with one hand and turning the dial with the other.

Cross Slide Handwheel

Graduated Dial

Increments ..... 0.002" (0.05mm)
One Full Revolution ..... 0.08" (2.03mm)

Use this handwheel to move the tool toward and away from the work. The cross slide handwheel has a direct-read graduated dial, which shows the total amount of material removed from the diameter of the workpiece.

Compound Rest Handwheel

Graduated Dial

Increments ..... 0.001" (0.025mm)
One Full Revolution ..... 0.05" (1.27mm)

Use this handwheel to move the cutting tool linearly along the set angle of the compound rest. Set the compound rest angle by hand-rotating it and securing it with the two cap screws (see **Figure 49** on **Page 44**). The compound rest has an indirect-read graduated dial.

Spindle Speed

Using the correct spindle speed is important for getting safe and satisfactory results, as well as maximizing tool life.

To set the spindle speed for your operation, you will need to: 1) Determine the best spindle speed for the cutting task, and 2) Configure the lathe controls to produce the required spindle speed.

Determining Spindle Speed

Many variables affect the optimum spindle speed to use for any given operation, but the two most important are the recommended cutting speed for the workpiece material and the diameter of the workpiece, as noted in the formula shown below.

$$\frac{{}^{*}\text{Recommended Cutting Speed (FPM)} \times 12}{\text{Dia. of Cut (in inches)} \times 3.14} = \text{Spindle Speed (RPM)}$$

*Double if using carbide cutting tool

Figure 54. Spindle speed formula for lathes.

Cutting speed, typically defined in feet per minute (FPM), is the speed at which the edge of a tool moves across the material surface.

A recommended cutting speed is an ideal speed for cutting a type of material in order to produce the desired finish and optimize tool life.

The books **Machinery's Handbook** or **Machine Shop Practice**, and some internet sites, provide excellent recommendations for which cutting speeds to use when calculating the spindle speed. These sources also provide a wealth of additional information about the variables that affect cutting speed and they are a good educational resource.

Also, there are a large number of easy-to-use spindle speed calculators that can be found on the internet. These sources will help you take into account the applicable variables in order to determine the best spindle speed for the operation.

Setting Spindle Speed Range

One of two spindle speed ranges is selected by repositioning the top V-belt between the spindle and idler pulleys (see **Figure 55**). Select the **A** position for low (50-1000 RPM) or **B** position for high (100–2000 RPM) speed ranges. The V-belt diagram below is also found on the headstock.

Tools Needed **Qty**
Hex Wrench 4mm..... 1

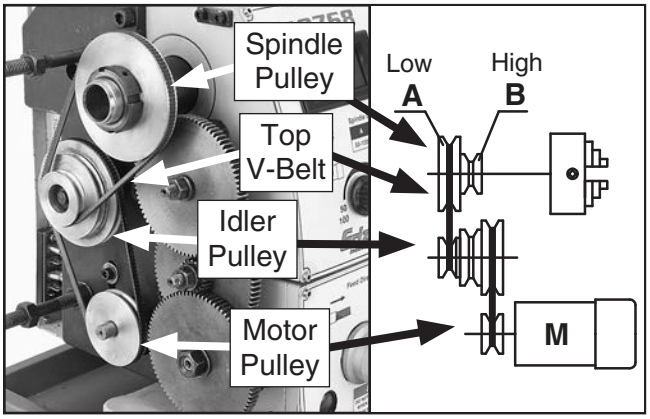


Figure 55. Belt positioned for low speed.

Setting Spindle Direction & Speed

Set the spindle rotation direction to forward or reverse with the spindle direction switch, shown in **Figure 56**. Reset the Emergency Stop button, press the ON button, select "1" on the lathe/mill selector (Model G0769 only) then turn the spindle speed dial clockwise until the desired spindle speed displays on the spindle speed RPM display.

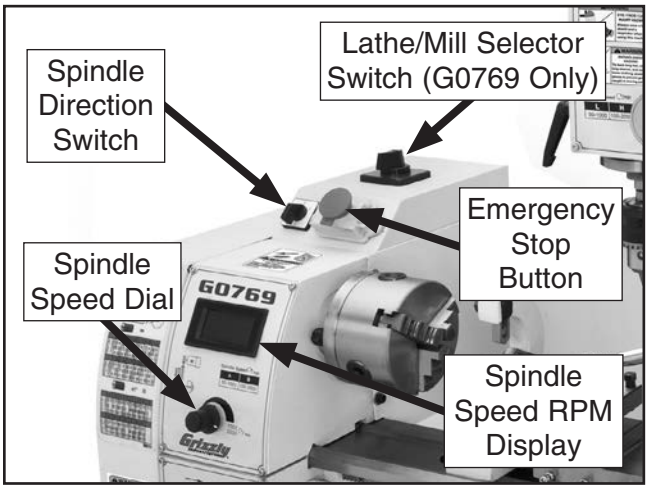


Figure 56. Spindle speed and direction controls.

Configuration Example

Follow this example to gain a better understanding of how to set the lathe spindle speed.

To set spindle speed to 100 RPM:

1. DISCONNECT MACHINE FROM POWER!

2. Open end cover.

3. Loosen tensioner screw (see **Figure 57**) to loosen V-belt tension.

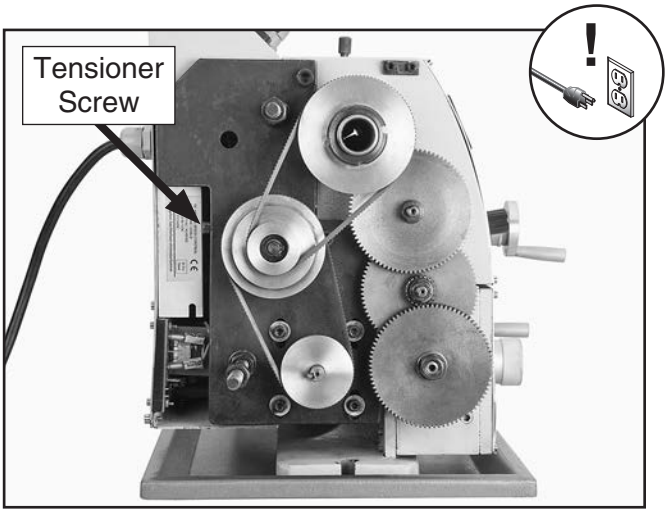


Figure 57. Location of tensioner screw used for tightening/loosening V-belts when changing belt positions.

4. Move top V-belt to **A** position (see **Figure 58**) to select low speed range (50–1000 RPM).

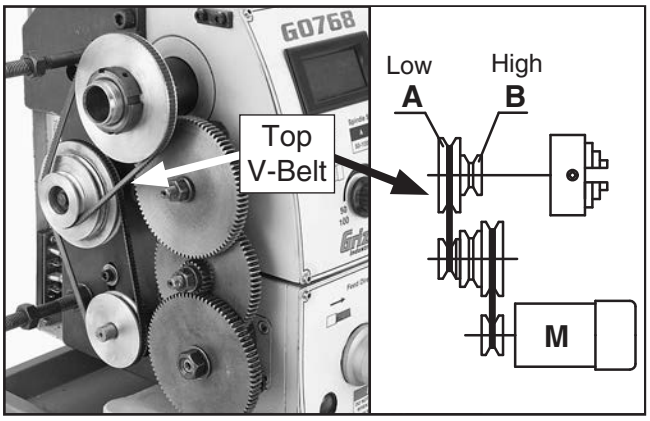


Figure 58. V-belt positioned in low speed range.

5. Re-tension V-belt (refer to "Tensioning V-Belts" on **Page 81**).

6. Re-install end cover.

7. Reset Emergency Stop button.

8. Rotate spindle direction switch to "F" or "R", and press ON button.

9. Rotate spindle speed dial clockwise until spindle speed display reads 100 RPM.

Understanding Gear Charts

This subsection explains how to understand the feed and thread charts on the headstock. If you do not understand lathe gear charts, or need a quick refresher, read this before configuring the end gears for power feeding or threading operations.

Feed & Thread Charts Label

The feed and thread charts label (see **Figure 59**) provides information for setting up end gears for threading or non-threading operations. The top displays a feed chart, the bottom displays metric and inch thread charts.

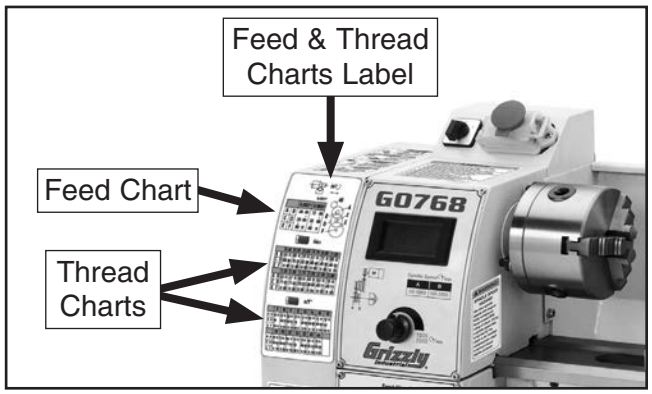
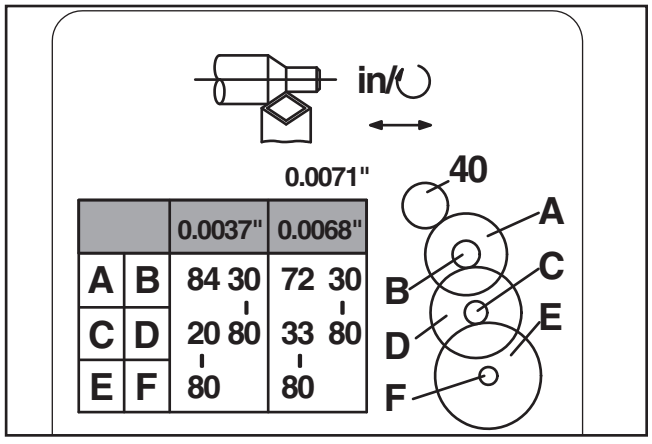


Figure 59. Feed and thread charts label.

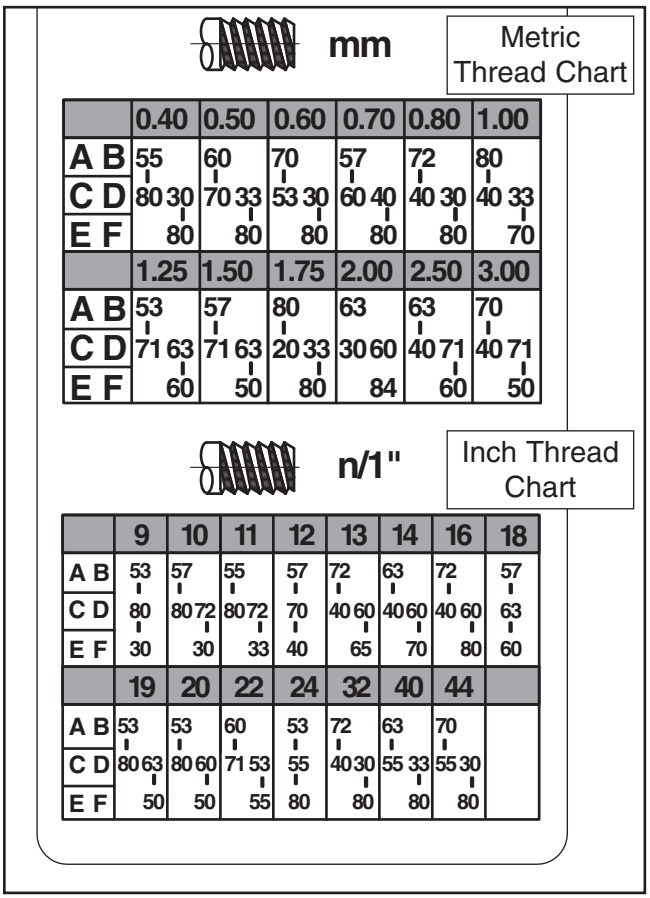
Feed Chart—Displays headstock end gear positions for different speeds of automatic feed (power feed) used with turning operations (see **Figure 60**).



		0.0037"	0.0068"
A	B	84 30	72 30
C	D	20 80	33 80
E	F	80	80

Figure 60. Feed chart.

Thread Charts—Display headstock end gear positions used for cutting various metric or inch threads (see **Figure 61**).



	0.40	0.50	0.60	0.70	0.80	1.00
A B	55	60	70	57	72	80
C D	80 30	70 33	53 30	60 40	40 30	40 33
E F	80	80	80	80	80	70

	1.25	1.50	1.75	2.00	2.50	3.00
A B	53	57	80	63	63	70
C D	71 63	71 63	20 33	30 60	40 71	40 71
E F	60	50	80	84	60	50

	9	10	11	12	13	14	16	18
A B	53	57	55	57	72	63	72	57
C D	80	80 72	80 72	70	40 60	40 60	40 60	63
E F	30	30	33	40	65	70	80	60

	19	20	22	24	32	40	44	
A B	53	53	60	53	72	63	70	
C D	80 63	80 60	71 53	55	40 30	55 33	55 30	
E F	50	50	55	80	80	80	80	

Figure 61. Threading charts.

How to Read the Feed Chart

Figure 62 identifies the three available feed rates and the feed icon at the top of the feed rate chart.

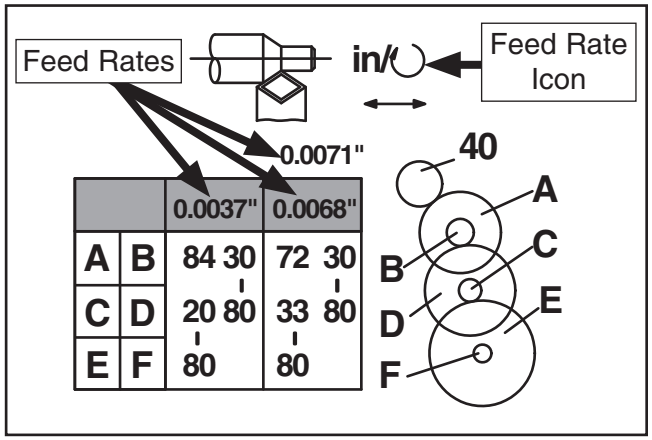


Figure 62. Chart displays the three feed rates.

Figure 63 identifies the end gears on the upper, middle, and lower shafts, and the 40-tooth (40T) spindle gear. The gears are represented by letters in the columns and the diagram.

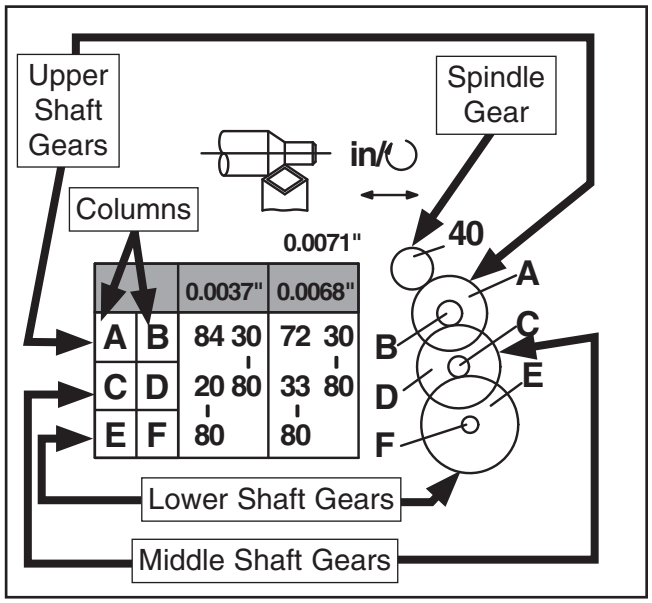


Figure 63. Identification of upper, middle and lower shaft gears.

Each shaft has room to mount gears in two positions—forward and rear (see **Figure 64**).

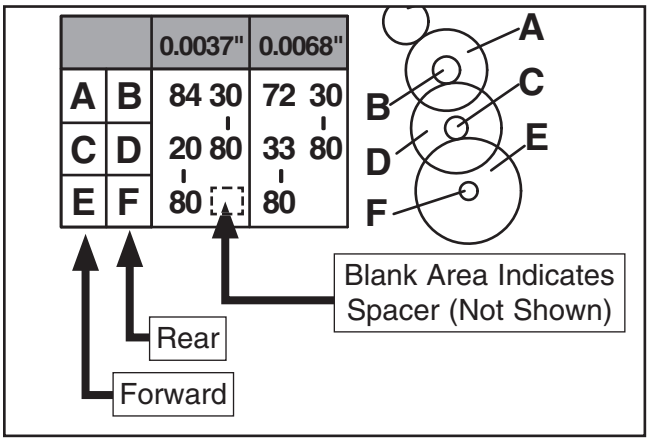


Figure 64. Forward and rear gear positions.

Both positions must be filled for the gears to work properly. This also applies to "blank" areas on the chart, such as the one right of the 80T (E) gear in **Figure 64** (the dashed box is used for identification only). A spacer should be installed in this position on the shaft. A spacer is not listed on the chart because the chart only reflects ACTIVE gear positions.

The lines shown between the numbers in **Figure 65** identify which gears mesh.

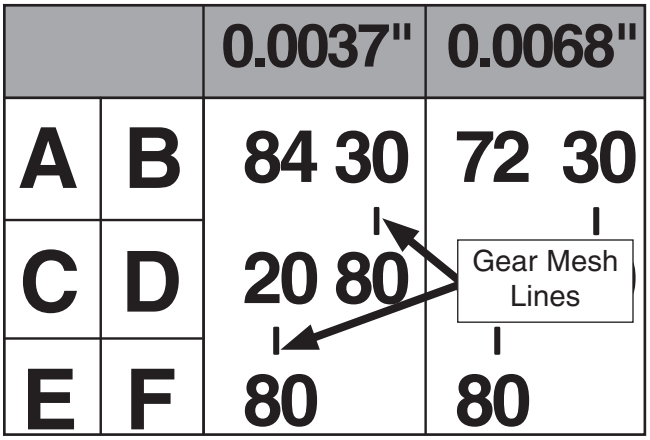


Figure 65. Lines indicate which gears mesh.

For example, to set the feed rate for 0.0037 in./rev., mesh the 30T (B) gear with the 80T (D) gear, and mesh the 20T (C) gear with the 80T (E) gear.

How to Read the Thread Charts

Figure 66 identifies the charts to use when setting carriage feed movement for metric or inch threading.

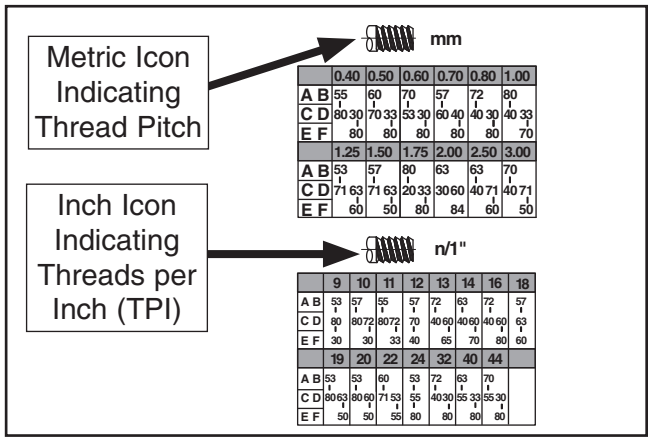
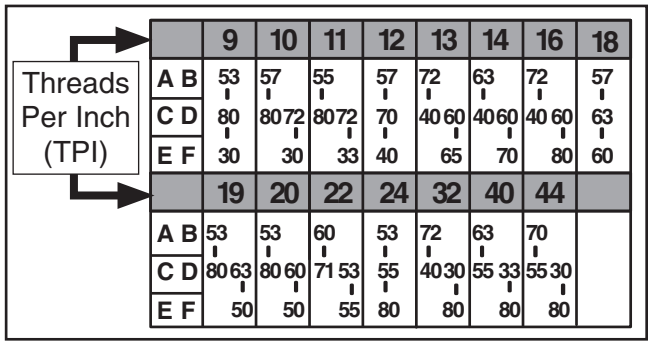


Figure 66. Icons indicate inch or metric threads.

The shaded boxes in **Figure 67** show the threads per inch (TPI) on the applicable chart.

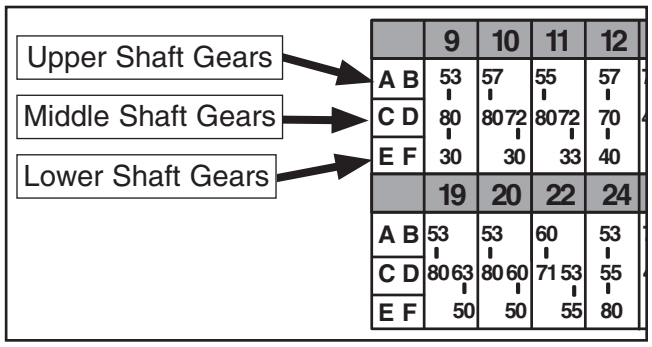


	9	10	11	12	13	14	16	18
A B	53	57	55	57	72	63	72	57
C D	80	80 72	80 72	70	40 60	40 60	40 60	63
E F	30	30	33	40	65	70	80	60

	19	20	22	24	32	40	44
A B	53	53	60	53	72	63	70
C D	80 63	80 60	71 53	55	40 30	55 33	55 30
E F	50	50	55	80	80	80	80

Figure 67. Numbers in shaded boxes indicate the TPI or threads per inch.

Figure 68 identifies the end gears on the upper, middle, and lower shafts. The gears are represented by letters.

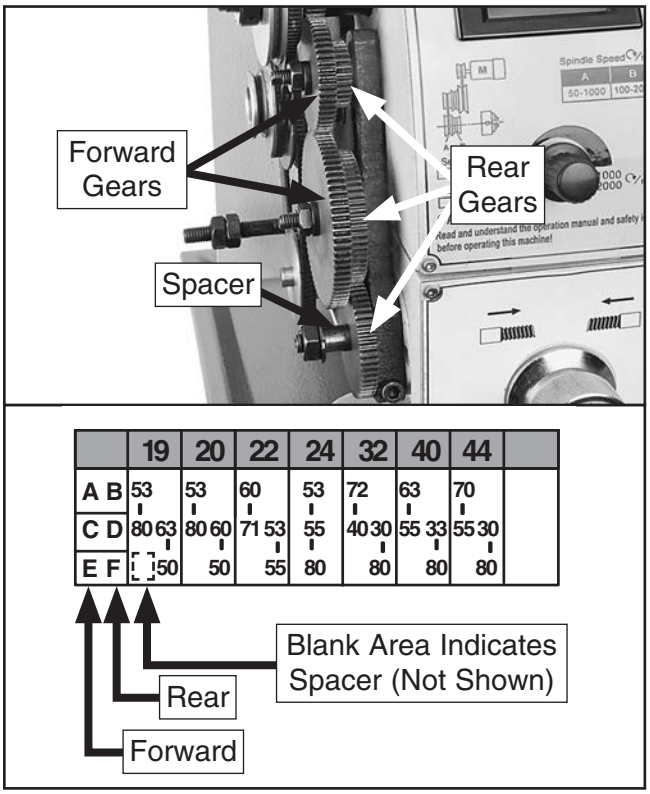


	9	10	11	12
A B	53	57	55	57
C D	80	80 72	80 72	70
E F	30	30	33	40

	19	20	22	24
A B	53	53	60	53
C D	80 63	80 60	71 53	55
E F	50	50	55	80

Figure 68. Identification of gears on shafts.

Each shaft has room to mount gears in two positions—forward and rear (see **Figure 69**).



	19	20	22	24	32	40	44
A B	53	53	60	53	72	63	70
C D	80 63	80 60	71 53	55	40 30	55 33	55 30
E F	50	50	55	80	80	80	80

Figure 69. Identification of forward and rear gear positions.

Both positions must be filled for the gears to work properly. This also applies to the "blank" areas on the chart, such as the one left of the 50T (F) gear shown in **Figure 69**. A spacer should be installed in this position on the shaft. A spacer is not listed because chart only reflects ACTIVE gear positions.

NOTICE

Because there is only one spacer, on some setups smaller gears must be used as spacers on the adjustable gears.

The lines shown between the numbers in **Figure 70** indicate which gears should be in mesh.

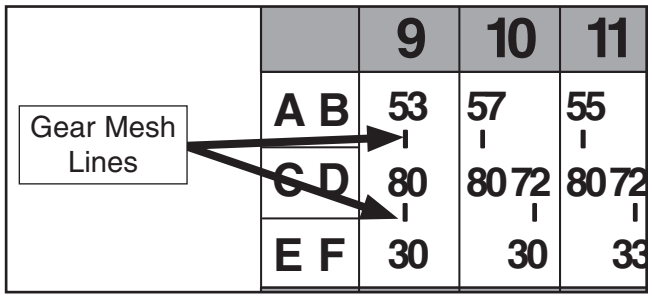


Figure 70. Lines between numbers indicate gears that should be in mesh.

For example, to set the lathe to cut 9 TPI (threads per inch), mesh the 80T (C) gear with the 53T (A) and 30T (E) gears.

End Gears

This section explains how to configure end gears for power feeding and threading operations.

Power Feed Configuration

The end gears are preset by the factory in this configuration, which is used for power feeding. Mesh the B and D gears and the C and E gears (see **Figure 71**). A spacer (F) is installed on the lower shaft behind the E gear.

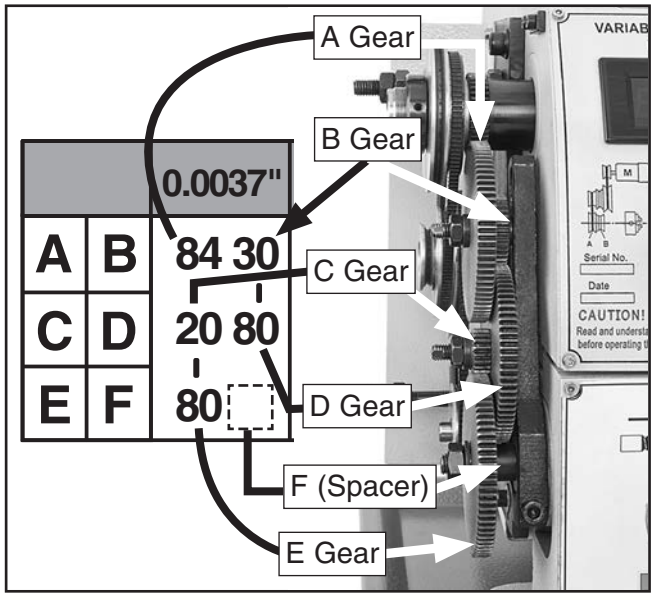


Figure 71. Power feed change gear configuration.

Primary Threading Configuration

This threading configuration is used for inch and metric threading. Mesh the A and C, and D and F gears, as shown in **Figure 72**. The A/B and C/D change gears each share a keyed bushing. A spacer (E) is installed on the lower shaft in front of the F gear.

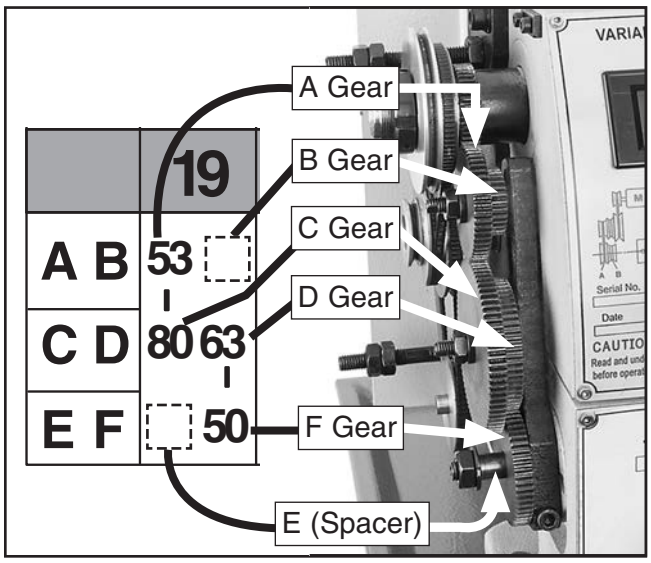


Figure 72. Primary threading configuration.

Secondary Threading Configuration

This threading configuration is used for a different range of inch threads. Mesh the A, C, and E gears, as shown in **Figure 73**. The A/B, and C/D gears each share a keyed bushing. The B and D gears (e.g. 20T or 30T) function as spacers since they do not mesh with other gears. A spacer (F) is installed on the lower shaft behind the E gear.

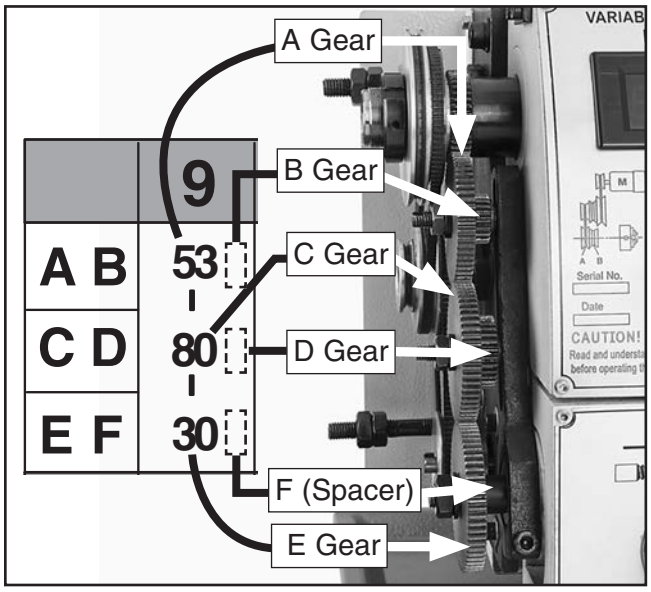


Figure 73. Secondary threading configuration.

Configuring End Gears

Follow the example below to understand how to change the gears from the factory set power feed configuration to the primary inch threading configuration. Concepts are similar to those for setting up gears for power feeding.

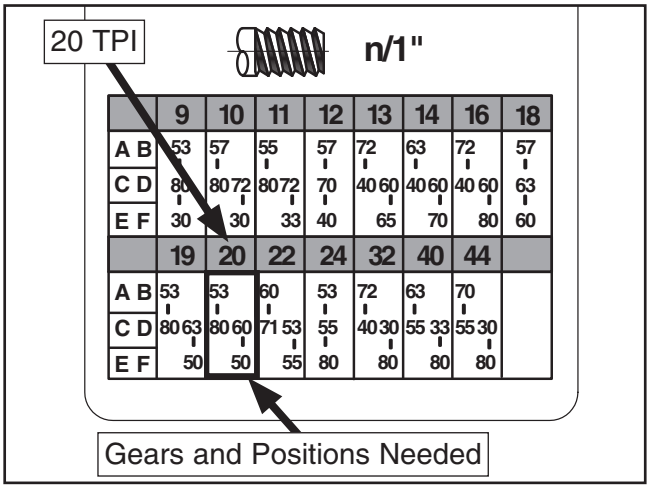
Note: *Many of the techniques and concepts explained here also apply to setting up gears for power feeding.*

Tools Needed	Qty
Hex Wrench 5mm	1 Ea
Open-End Wrenches 6, 14, 17mm	1 Ea
Punch	1
Hammer	1

To configure end gears for 20 TPI:

1. DISCONNECT MACHINE FROM POWER!

2. Locate **20** TPI on thread chart shown in **Figure 74**.



	9	10	11	12	13	14	16	18
A B	53	57	55	57	72	63	72	57
C D	80	80 72	80 72	70	40 60	40 60	40 60	63
E F	30	30	33	40	65	70	80	60
	19	**20**	**22**	**24**	**32**	**40**	**44**	
A B	53	53	60	53	72	63	70	
C D	80 63	80 60	71 53	55	40 30	55 33	55 30	
E F	50	50	55	80	80	80	80	

Figure 74. Gear positions for 20 TPI on thread chart.

3. Gather 53T, 80T, 60T, and 50T gears. (The 80T gear may already be installed.)

4. Remove end gear cover.

5. Loosen adjuster cap screw shown in **Figure 75**, and pivot adjuster down to disengage gears.

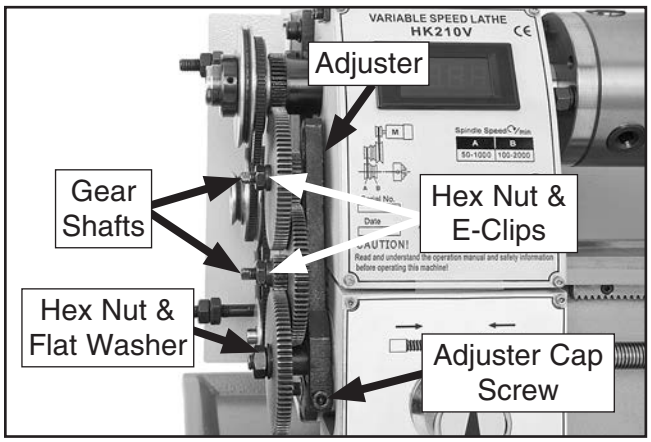


Figure 75. Adjuster cap screw location.

6. Remove hex nuts, e-clips, and flat washer that secure gears (see **Figure 75**).

7. Loosen top and bottom gear shafts to make it easier to remove gears in following steps.

8. Slide 80T and 84T gears off shafts, then remove middle C/D (20T/80T) gear and shaft (see **Figure 76**).

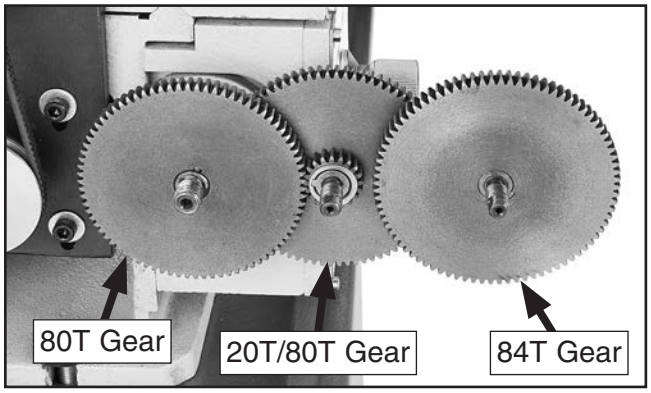


Figure 76. Gear removal identification.

Tip: *Hold middle shaft T-nut in adjuster while removing 20T/80T gear so T-nut does not fall off.*

9. Remove keyed spacer from lower gear shaft (see **Figure 77**).

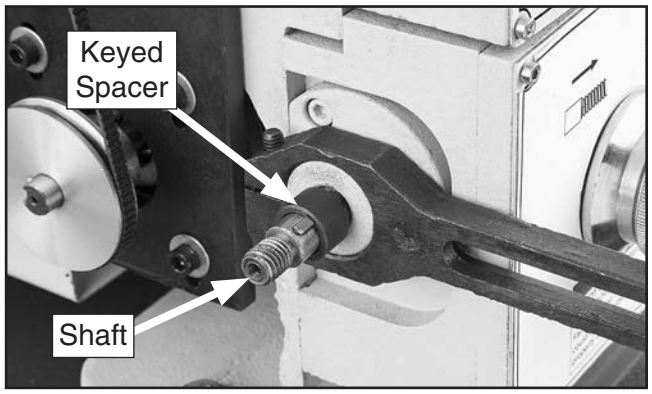


Figure 77. Location of keyed spacer.

10. Slide 50T gear onto lower shaft with hub facing in, re-install keyed spacer and flat washer, then thread on hex nut finger-tight, for now (see **Figure 78**).

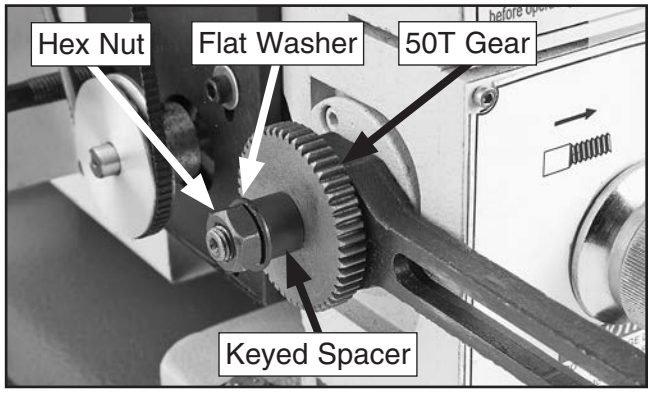


Figure 78. 50T gear installed on lower shaft.

11. Remove gear shaft from middle C/D (20T/80T) gear (see **Figure 79**).

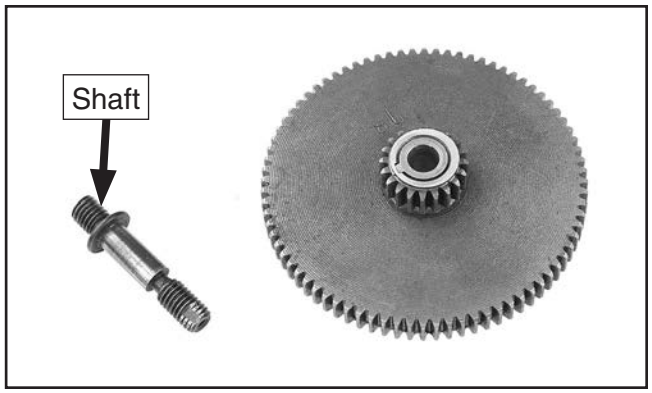


Figure 79. Shaft removed from 20T/80T gear.

12. Remove 20T gear with keyed bushing from 80T gear (see **Figure 80**).

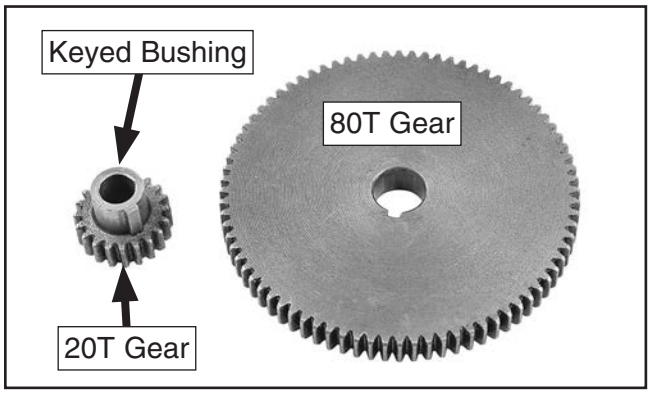


Figure 80. 20T gear removed from 80T gear.

13. Remove keyed bushing from 20T gear.

14. Connect 80T and 60T gear with keyed bushing, as shown in **Figure 81**. The 80T gear hub faces out; the 60T gear hub faces the 80T gear.

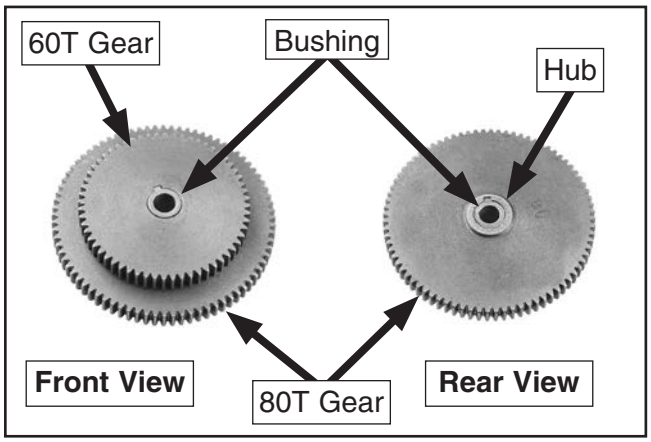


Figure 81. 80T and 60T gears connected.

15. Put dab of NLGI #2 grease onto 80T/60T gear shaft, then insert longer end of shaft into gear (see **Figure 82**).

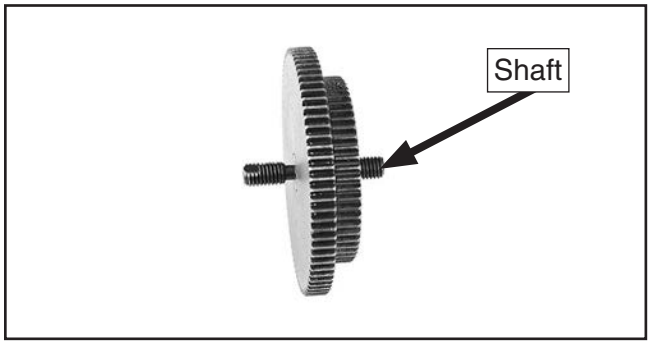


Figure 82. Shaft installed into 80T/60T gears.

16. Thread short end of 80T/60 gear shaft into T-nut on adjuster until finger tight (see **Figure 83**).

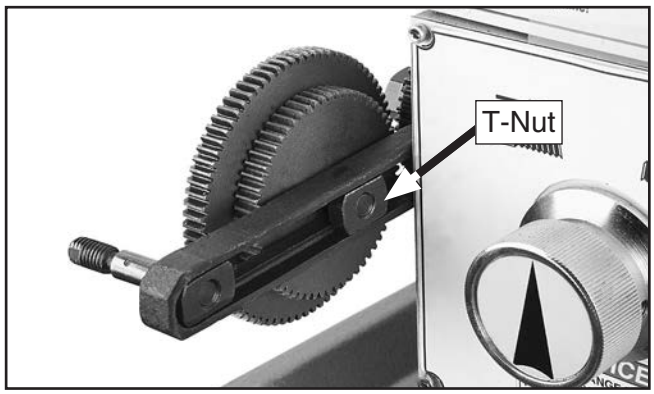


Figure 83. 80T/60T gear threaded onto T-nut.

17. Remove 30T gear with keyed bushing from 84T gear.

18. Install 30T gear with keyed bushing onto 53T gear (see **Figure 84**). Hub of 53T gear should face 30T gear.

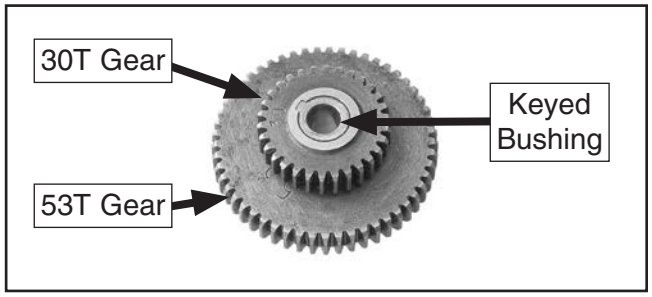


Figure 84. 53T/30T gears assembled.

19. Put a dab of grease on upper shaft, then slide 53T/30T gear on, as shown in **Figure 85**.

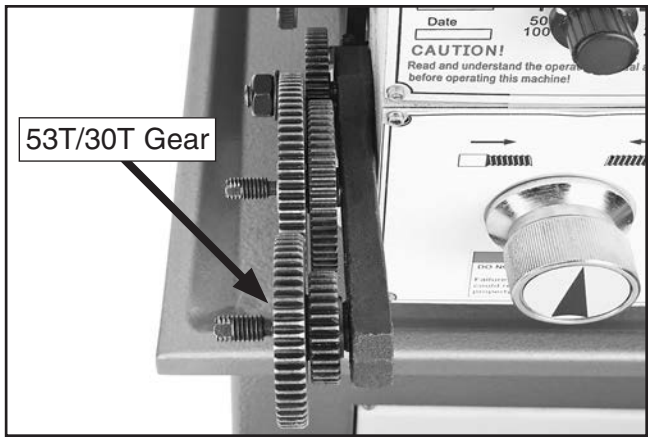


Figure 85. 53T/30T gear installed on upper shaft.

20. Re-install e-clips and hex nuts onto middle and top gear shafts.

21. Adjust lash between meshed gears so it is approximately 0.003", then tighten gear shafts and fasteners.

22. Swing adjuster up and mesh 53T gear with 40T spindle gear (see **Figure 86**).

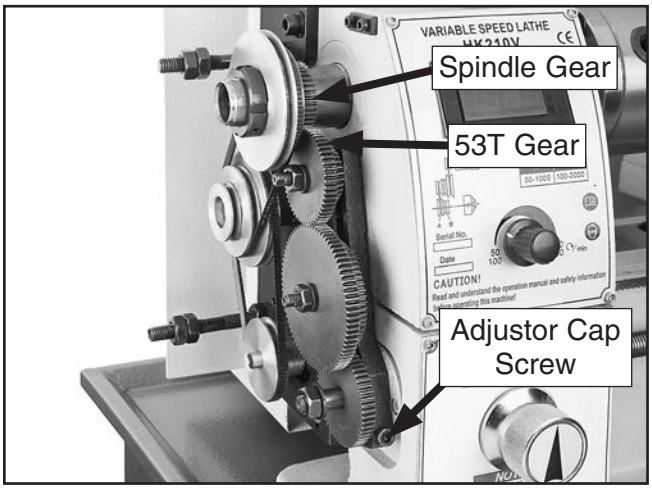


Figure 86. 53T gear meshed with spindle gear.

23. Secure adjuster cap screw.

24. Re-install end gear cover. The end gears are now configured for 20 TPI.

Power Feed

The carriage has power feed (or automatic feed) options for threading or non-threading operations. This section describes how to use the power feed option for non-threading operations. To learn how to power the carriage for threading operations, refer to **Threading** on **Page 58**.

NOTICE

To avoid damaging lathe, NEVER allow cutting tool to run into chuck! ALWAYS make sure spindle is completely stopped BEFORE using headstock controls to make changes.

Power Feed Controls

Use the following descriptions and figures to understand the power feed controls.

Before using power feed, you may have to reconfigure the end gears, depending on how they are set up (refer to **Power Feed Configuration** on **Page 52**). The lathe comes from the factory with the end gears set up in the power feed configuration.

A. Spindle Direction Switch: Enables forward or reverse carriage travel when feed direction dial and half nut lever are engaged. The carriage will not move when the switch is in the "0" position.

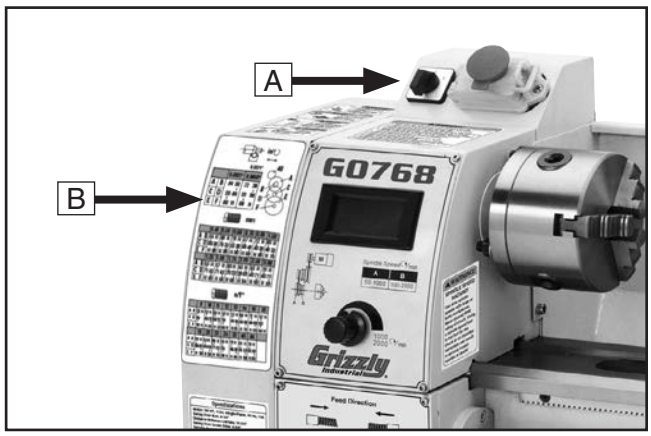


Figure 87. Spindle switch and feed rate chart.

B. Feed Rate Chart: Displays end gear settings for selected feed rate (see **Figure 88**).

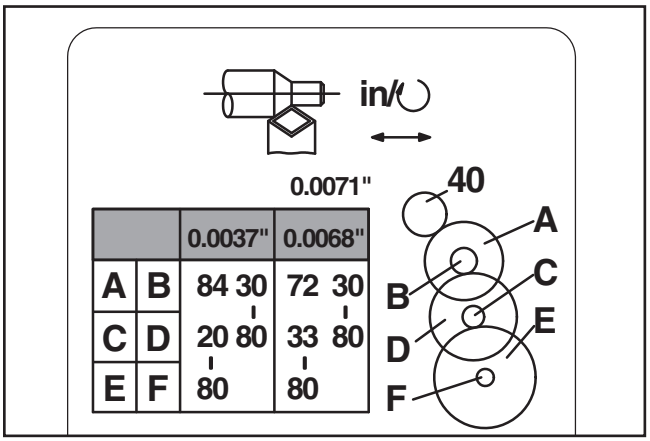


Figure 88. Feed chart.

C. Feed Direction Dial: Selects carriage travel direction without changing direction of headstock rotation. The carriage moves left when feed direction dial is turned right, half nut lever is engaged, and spindle direction switch is set to "F".

The carriage moves right when the feed direction dial is turned to the left. The carriage will not move when the lever is in the center position.

Carriage travel direction reverses when the spindle direction switch is set to "R".

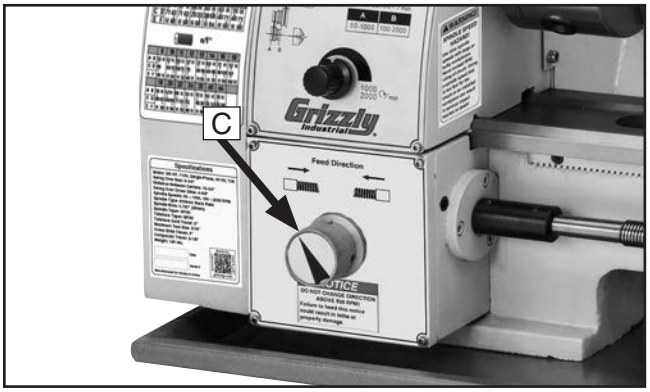


Figure 89. Feed direction dial.

D. Half Nut Lever: Engages/disengages half nut for power feed operations.

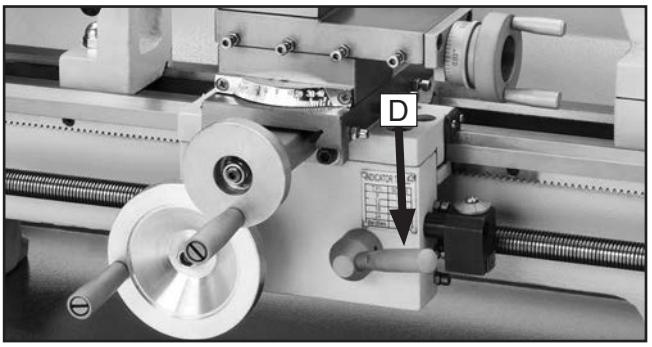


Figure 90. Half nut lever.

NOTICE

To avoid potential carriage/chuck crash, disengage half nut lever immediately after completing power feed operations.

Setting Power Feed Rate

Follow the example below to better understand how to set the lathe power feed.

Tools Needed:
Hex Wrenches 4, 5mm.....1 Ea
Open-End Wrenches 13, 14mm .....1 Ea

To set power feed rate to 0.0037 in/rev.:

1. DISCONNECT MACHINE FROM POWER!

2. Locate the 0.0037 in./rev. column heading on the feed rate chart, as shown in **Figure 91**.

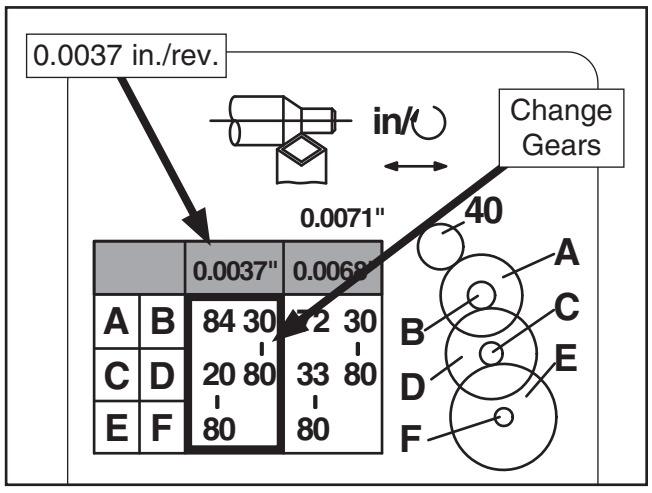


Figure 91. Change gears for 0.0037 in./rev. on feed chart.

3. Gather the required **A–F** change gears: 84T, 30T, 20T and two 80T gears, based upon the chart in **Figure 91**.

4. Remove end cover.

5. Loosen adjuster cap screw shown in **Figure 92**, and pivot adjuster down to disengage gears.

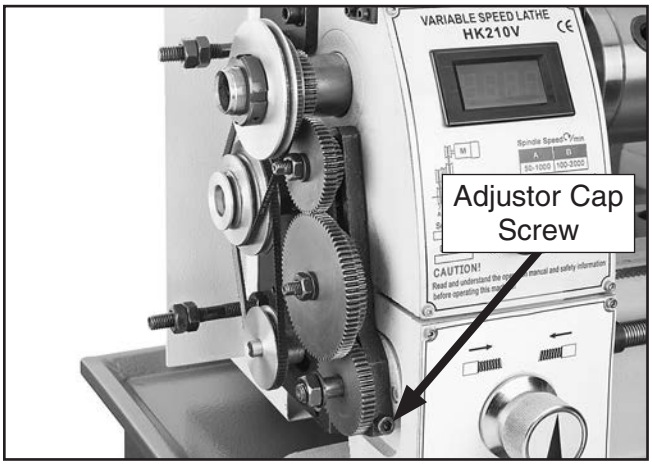


Figure 92. Adjustor cap screw location.

6. Remove hex nuts, e-clips, and flat washers that secure existing gears.

7. Replace A/B gear with 84T and 30T gears, replace C/D gear with 20T and 80T gears, and install spacer with 80T gear on bottom shaft (see **Figure 93**).

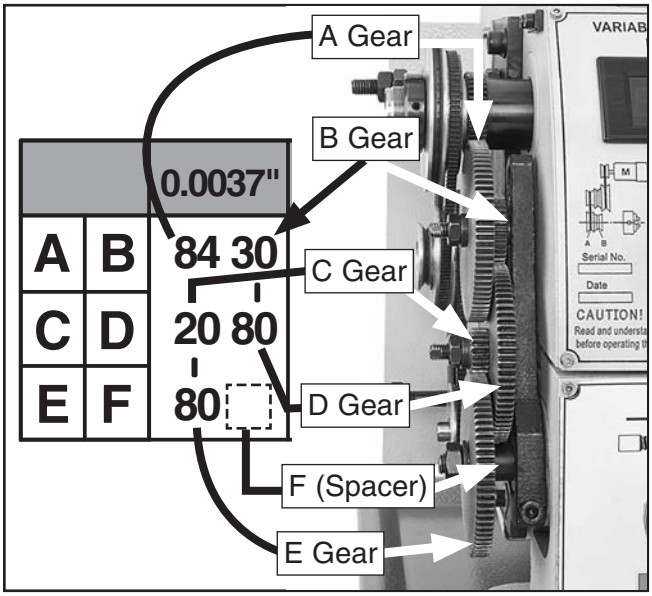


Figure 93. Power feed change gear configuration.

8. Adjust lash between meshed gears so it is approximately 0.003", then tighten the gear shafts.

9. Swing the adjuster up and mesh the 84T gear with the spindle gear.

10. Secure the adjuster cap screw.

11. Re-install end gear cover. The lathe is now set for a power feed rate of 0.0037 in./rev.

Threading

The following subsections describe how to use the threading controls and charts to set up the lathe for a threading operation. If you are unfamiliar with how to cut threads on a lathe, we strongly recommend that you read books, review industry trade magazines, or get formal training before attempting any threading projects.

Headstock Threading Controls

The threading chart on the headstock face displays the settings for inch and metric threading.

Using the controls on the lathe, follow the example below to understand how to set up the lathe for the desired threading operation.

To set lathe to thread 20 TPI right-hand threads:

1. Configure gears as instructed in **End Gear Configuration Example** on **Page 53**.

2. Place the top V-belt in the **A** position for low (50-1000 RPM), as shown in **Figure 94**.

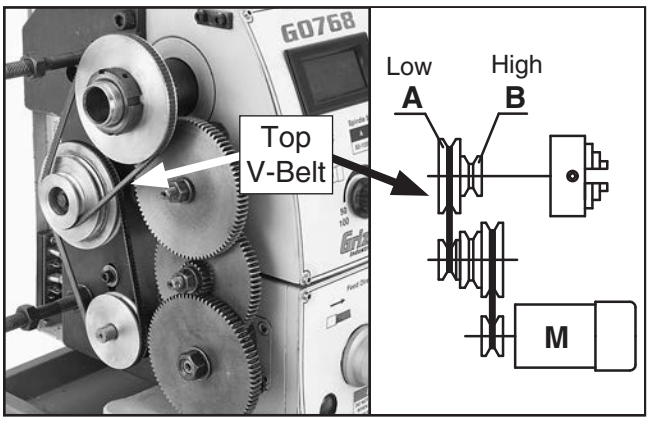


Figure 94. Top V-belt in "A" position.

3. Move the feed direction dial to the right (see **Figure 95**). The lathe is now set up to cut 20 TPI threads.

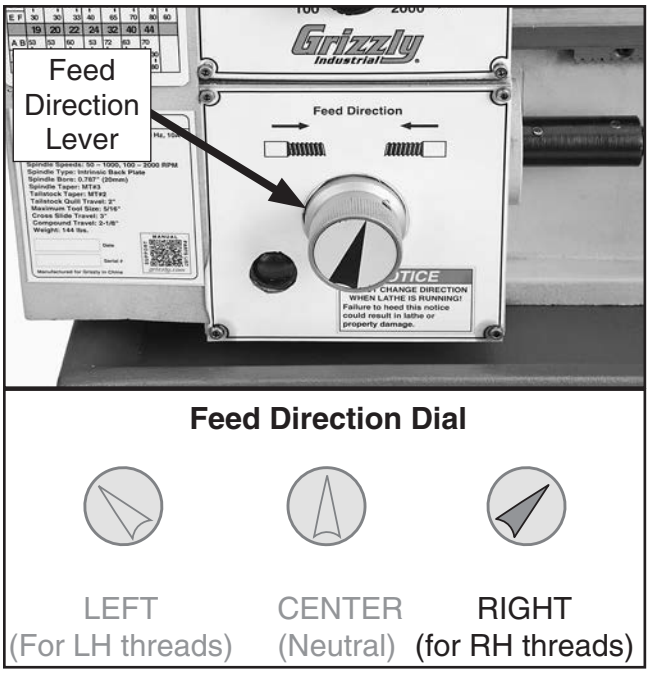


Figure 95. Feed direction dial setting.

Apron Threading Controls

The half nut lever engages the carriage with the leadscrew, which moves the carriage and cutting tool along the length of the workpiece for threading operations (see **Figure 96**).

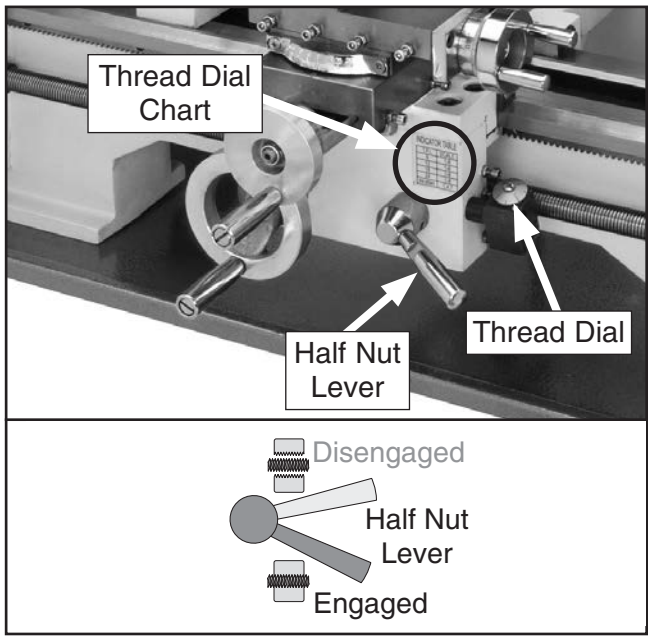


Figure 96. Apron threading controls.

Thread Dial

The numbers on the thread dial (**Figure 96**) are used with the thread dial chart to show when to engage the half nut during inch threading.

Note: *The thread dial is not used for metric threading. For that type of operation, you must leave the half nut engaged from the beginning until turning is complete.*

NOTICE

When threading, use slowest speed possible and avoid deep cuts, so you are able to disengage half nut when required to prevent a carriage crash!

When the first cutting pass is complete, the operator disengages the carriage from the leadscrew using the half nut lever. The operator returns the carriage for the next pass and re-engages the half nut using the same thread dial setting to resume the cut in the previous pass.

Thread Dial Chart

The thread dial chart is located on the headstock, as shown in **Figure 96**.

Find the TPI (threads per inch) that you want to cut on the thread dial chart (see **Figure 97**), then reference the scale number to the right. The scale numbers indicate when to engage the half nut for a specific thread pitch as indicated by the thread dial.

INDICATOR TABLE

TPI	SCALE
9	1-8
12	1-8
18	1-8
24	1-8
All Others	1, 4, 7

Figure 97. Thread dial chart.

The following examples explain how to use thread dial and thread dial chart.

TPI Divisible by 3: Use any line on the thread dial (see example in **Figure 98**).

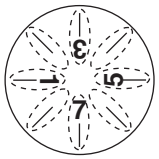
TPI	Dial Number	Thread Dial
9, 12, 18, 24	1–8	

Figure 98. Dial positions for threading TPI divisible by 3.

All Other TPI: Use lines 1, 4 or 7 (see example in **Figure 99**).

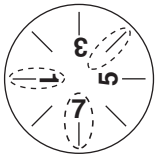
TPI	Dial Number	Thread Dial
10, 11, 13, 14, 16, 19, 20, 22, 32, 40, 44	1, 4, 7	

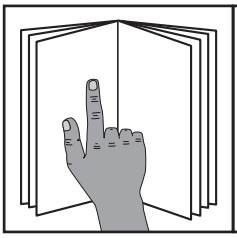
Figure 99. Dial positions for other TPI.

SECTION 5: MILL OPERATIONS

Operation Overview

The purpose of this overview is to provide the novice machine operator with a basic understanding of how the machine is used during operation, so the machine controls/components discussed later in this manual are easier to understand.

Due to the generic nature of this overview, it is **not** intended to be an instructional guide. To learn more about specific operations, read this entire manual and seek additional training from experienced machine operators, and do additional research outside of this manual by reading "how-to" books, trade magazines, or websites.

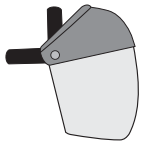


WARNING

To reduce your risk of serious injury, read this entire manual BEFORE using machine.

WARNING

To reduce risk of eye or face injury from flying chips, always wear approved safety glasses and face shield when operating this machine.



NOTICE

If you are not experienced with this type of machine, WE STRONGLY RECOMMEND that you seek additional training outside of this manual. Read books/magazines or get formal training before beginning any projects. Regardless of the content in this section, Grizzly Industrial will not be held liable for accidents caused by lack of training.

WARNING

To reduce risk of injury and increase longevity of machine, always start spindle rotation with spindle speed dial set to lowest setting.

To complete a typical milling operation, the operator does the following:

1. Puts on personal protective equipment.
2. Securely clamps workpiece to cross slide table.
3. With machine disconnected from power, installs correct tooling.
4. Adjusts mill headstock height.
5. Selects correct gear setting on milling headstock gearbox for desired speed range.
6. Connects machine to power.
7. Rotates spindle speed dial to lowest setting, and resets Emergency Stop button.
8. Presses ON button, turns spindle direction switch to "F", and rotates spindle speed dial to correct spindle speed.
9. Uses spindle downfeed and table controls to perform operation.
10. Presses Emergency Stop button and waits for spindle to completely stop before removing workpiece, changing tooling, or changing spindle speeds.

Removing Compound Rest

The compound rest and tool post must be removed before milling/drilling so the cross slide table can be used as the milling table.

Tools Needed	Qty
Hex Wrench 3mm	1
Hex Wrench 4mm	1

Removing Compound Rest

Remove the two cap screws that secure compound rest (see **Figure 100**), then remove it.

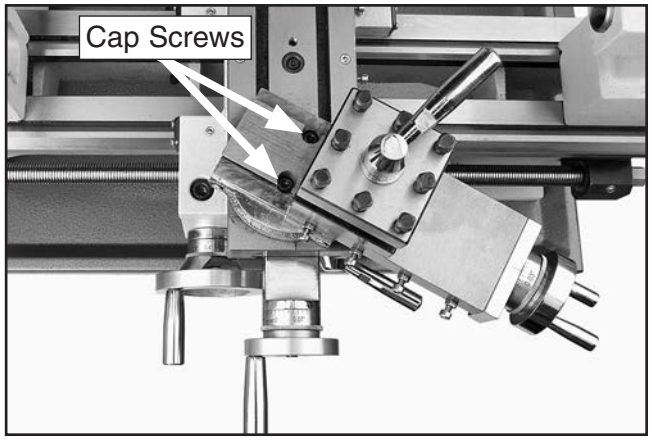


Figure 100. Location of compound rest cap screws.

Re-installing Compound Rest

Align compound rest with swivel base mounting holes and nut (see **Figure 101**), then secure with cap screws previously removed.

Note: *While re-installing compound rest, use a 3mm hex wrench to press swivel base up from underneath and keep it from sliding back down into cross slide.*

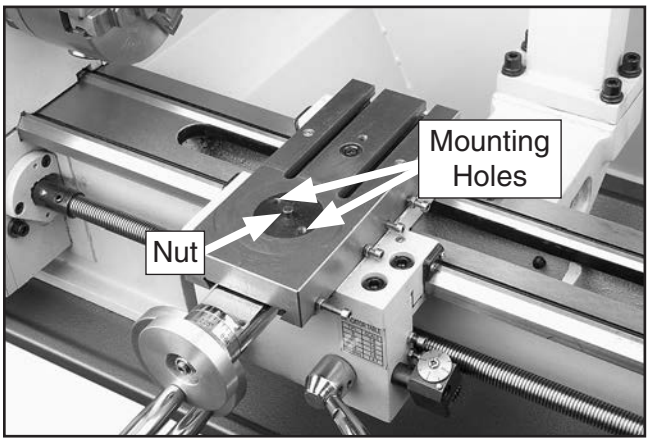


Figure 101. Swivel base components.

Headstock Movement

The milling headstock moves in the following ways:

- Travels up and down the column (Z-axis).
- Tilts 45° left or right relative to the table.

Raising/Lowering Headstock

1. DISCONNECT MACHINE FROM POWER!

2. Loosen both Z-axis lock levers shown in **Figure 102**.

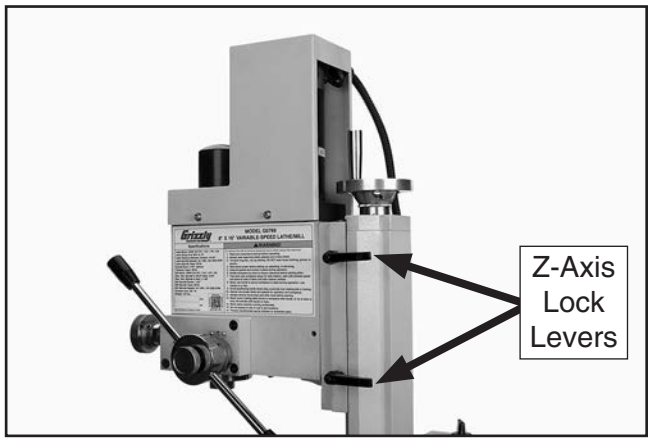


Figure 102. Location of Z-Axis lock levers.

3. Use vertical handwheel shown in **Figure 103** to adjust headstock height.

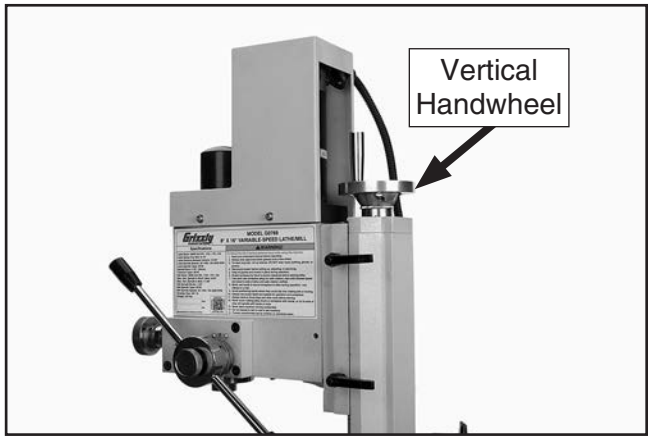


Figure 103. Location of Z-Axis handwheel.

4. Retighten lock levers.

Tilting Headstock

Tools Needed	Qty
Wrench 16mm	1
Wrench 14mm	1

To tilt headstock:

1. DISCONNECT MACHINE FROM POWER!

2. Support headstock with one hand, then loosen headstock center bolt and angle lock nut (see **Figure 104**).

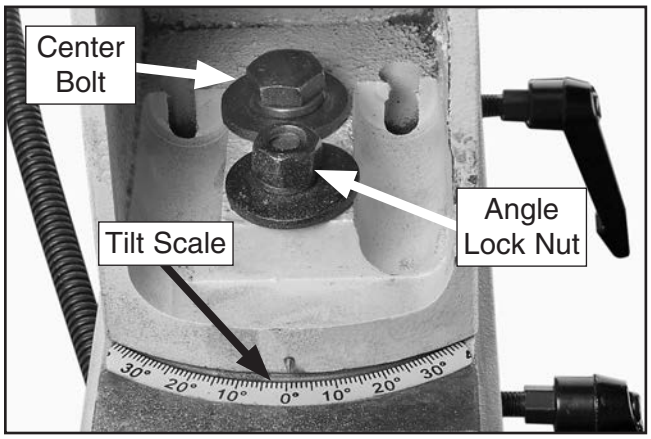


Figure 104. Headstock tilt controls.

3. While viewing tilt scale, rotate headstock to required angle, then retighten center bolt and angle lock nut to secure headstock.

Table Travel

The cross slide table travels in two directions, as illustrated in **Figure 105**:

- X-axis (longitudinal)
- Y-axis (cross)

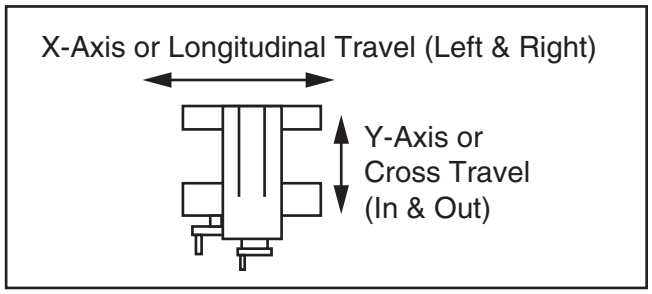


Figure 105. Possible directions of cross slide travel.

These movements are controlled by the carriage handwheel and cross slide handwheel, (**see Figure 106**).

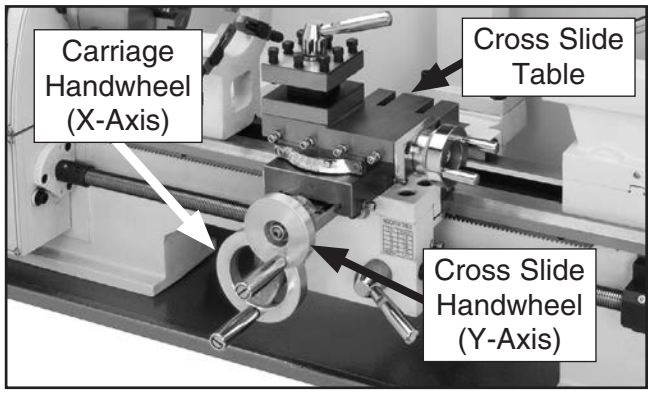


Figure 106. Table travel controls.

Carriage Handwheel (X-Axis)

Graduated Dial

Increments ..... 0.01" (0.25mm)
One Full Revolution ..... 1" (25.4mm)

Use the carriage handwheel to move the carriage left or right along the bed. Adjust the position of the graduated scale by holding the handwheel with one hand and turning the dial with the other.

Cross Slide Handwheel (Y-Axis)

Graduated Dial

Increments ..... 0.002" (0.05mm)
One Full Revolution ..... 0.08" (2.03mm)

Use this handwheel to move the cross slide table toward or away from the tooling. The cross slide handwheel has a direct-read graduated dial, which will read twice the actual table cross feed travel.

Using Spindle Downfeed Controls

The Model G0769 features two different types of spindle downfeed controls: coarse and fine, as shown in **Figure 107**.

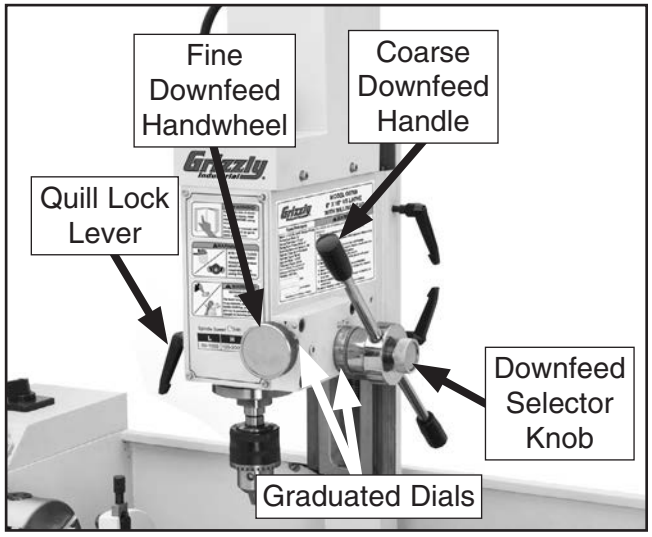


Figure 107. Spindle controls.

Coarse Downfeed

Coarse downfeed is typically used for drilling applications. Rotate either of the coarse downfeed handles (see **Figure 107**) to lower the spindle, and an internal coil spring helps raise the spindle back to the top position when you stop applying downward pressure on the handle.

Note: *To maintain control of the upward spindle travel and the rotating bit in your workpiece, always continue holding the handle until the spindle returns to the top position. Letting go of the coarse downfeed handles when the spindle is in the lowered position will cause the spindle to retract too quickly and slam up into the headstock or lift the workpiece and cause it to spin out of control.*

The coarse downfeed hub features a graduated dial that measures spindle movement in 0.02" increments, with one full revolution equaling 2.00" of spindle travel.

Fine Downfeed

Fine downfeed is typically used for milling applications, because the spindle only moves up or down when the fine downfeed handwheel (see **Figure 107**) is rotated (there is no automatic spindle return to the top position, as with the coarse downfeed controls). This allows the spindle height to be locked in place for precise Z-axis positioning of a cutter or end-mill when milling a flat surface across the face of a workpiece. In order to ensure the milled surface remains flat, the spindle height cannot move until the entire milling operation is complete.

The fine downfeed graduated dial measures spindle movement in 0.001" increments, with one full revolution equaling 0.080" of spindle travel.

Engaging Fine Downfeed Controls

In the following example, the fine downfeed controls are used to mill 0.010" off a workpiece:

1. Use vertical travel handwheel (see **Figure 103** on next page) to adjust cutting tool just above workpiece surface, then secure the headstock with Z-axis lock levers.

2. Tighten downfeed selector knob (see **Figure 107**) to engage fine downfeed handwheel.

3. Loosen quill lock lever.

4. Rotate fine downfeed handwheel clockwise and lower cutting tool so it just touches workpiece.

5. Move workpiece out of the way.

6. Using graduated dial to gauge spindle movement, rotate fine downfeed handwheel clockwise 0.010".

7. Tighten quill lock lever.

8. Turn mill/drill ***ON*** and perform cutting pass.

Installing/Removing Tooling

The Model G0769 includes a ½" drill chuck with MT#2 arbor (see **Figure 108**).

Figure 108. ½" chuck joined with MT#2 arbor.

⚠CAUTION

Cutting tools are sharp and can easily cause cutting injuries. Always protect your hands with leather gloves or shop rags when handling cutting tools.

Installing Tooling

Tools Needed	Qty
Wrench 8mm	1
Wrench 17mm	1
Wrench 25mm	1

To install tooling:

1. DISCONNECT MACHINE FROM POWER!

2. Remove drawbar cap (see **Figure 109**).

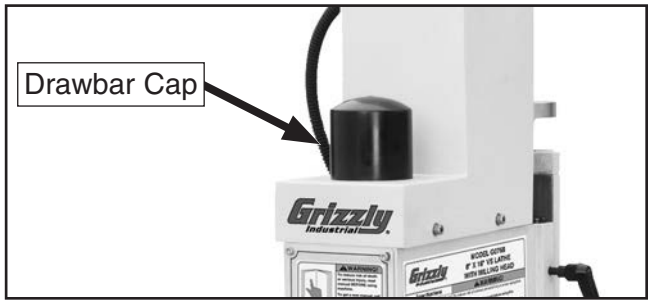


Figure 109. Location of drawbar cap.

3. Insert tooling into spindle until in contacts drawbar.

4. Working from top, thread drawbar by hand into tooling until it is snug (see **Figure 110**).

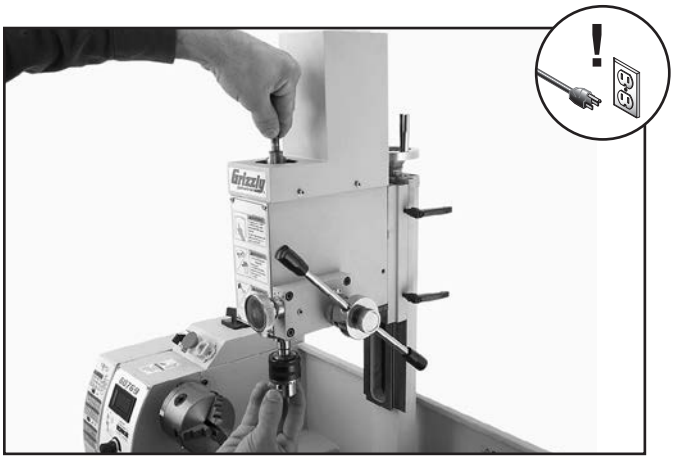


Figure 110. Threading drawbar into tooling.

5. Tighten drawbar.

   Note: *Do not overtighten drawbar. Overtightening makes tool removal difficult and will damage arbor and threads.*

6. Tighten drawbar lock nut, as shown in **Figure 111**.

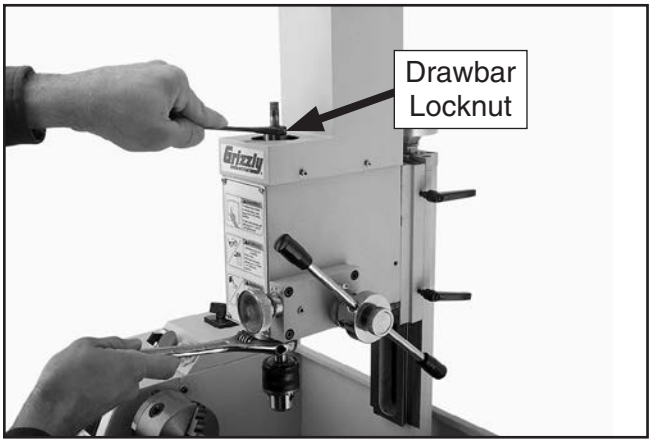


Figure 111. Tightening drawbar lock nut.

7. Re-install drawbar cap.

Removing Tooling

Tools Needed	Qty
Wrench 8mm	1
Wrench 17mm	1
Wrench 25mm	1
Brass Hammer	1

To remove tooling:

1. DISCONNECT MACHINE FROM POWER!

2. Remove drawbar cap.

3. Loosen drawbar lock nut (see **Figure 111**) on previous page.

4. Unthread drawbar from tooling one full rotation.

   Note: *Do not fully unthread tooling from drawbar or the drawbar and tool threads could be damaged in the next step.*

5. Tap top of drawbar with hammer to unseat taper (see **Figure 112**).

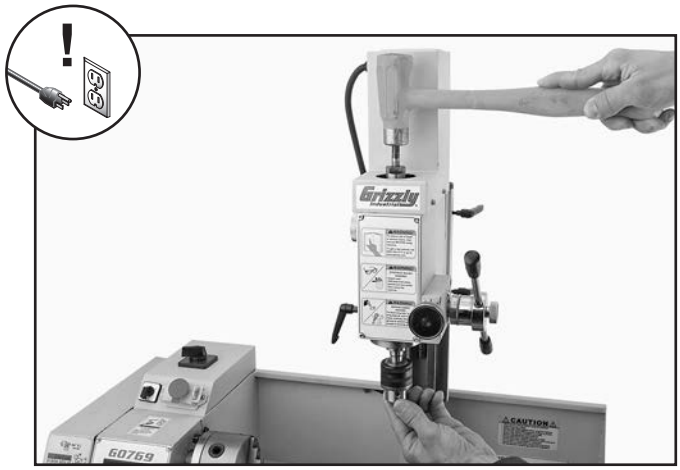


Figure 112. Tapping drawbar to unseat tool taper.

6. Hold onto tooling with one hand and fully unthread drawbar.

Spindle Speed

Using the correct spindle speed is important for safe and satisfactory results, as well as maximizing tool life.

To set the mill spindle speed for operation, you will need to: 1) Determine the best spindle speed for the cutting/drilling task, and 2) configure the high/low gearbox knob for the desired speed range, 3) use the spindle speed dial and spindle speed RPM display to get the spindle speed.

Determining Spindle Speed

Many variables affect the optimum spindle speed to use for any given operation, but the two most important are the recommended cutting speed for the workpiece material and the diameter of the cutting tool, as noted in the formula shown in **Figure 113**.

$$\frac{*\text{Recommended Cutting Speed (FPM)} \times 12}{\text{Tool Dia. (in inches)} \times 3.14} = \text{Spindle Speed (RPM)}$$

*Double if using carbide cutting tool

Figure 113. Spindle speed formula for mill/drills.

Cutting speed, typically defined in feet per minute (FPM), is the speed at which the edge of a tool moves across the material surface.

A recommended cutting speed is an ideal speed for cutting a type of material in order to produce the desired finish and optimize tool life.

The books **Machinery's Handbook** or **Machine Shop Practice**, and some internet sites, provide excellent recommendations for which cutting speeds to use when calculating the spindle speed. These sources also provide a wealth of additional information about the variables that affect cutting speed and they are a good educational resource.

Also, there are a large number of easy-to-use spindle speed calculators that can be found on the internet. These sources will help you take into account the applicable variables in order to determine the best spindle speed for the operation.

Setting Spindle Speed

1. Rotate spindle speed dial all the way counterclockwise to set spindle speed to lowest value.

2. Rotate high/low gearbox knob (see **Figure 114**) to either "**L**" (spindle speeds 50–100 RPM) or "**H**" (spindle speeds 100–2000 RPM).

   Note: *When switching between gears, it may be necessary to rotate spindle by hand so gears will align and engage.*

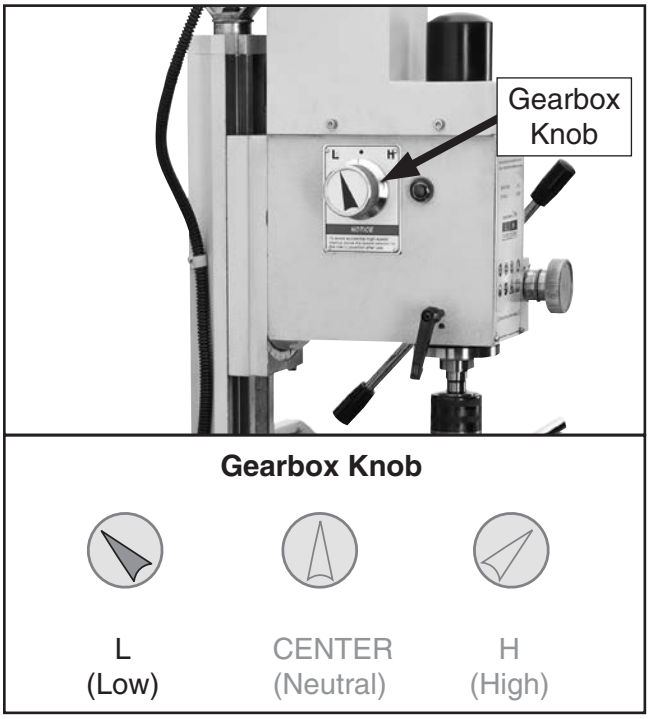


Figure 114. High/low gearbox knob set to low "L".

3. Press ON button and turn spindle direction switch to "F".

4. While watching RPM display, rotate spindle speed dial clockwise until desired RPM is reached.

SECTION 6: ACCESSORIES

⚠WARNING

Installing unapproved accessories may cause machine to malfunction, resulting in serious personal injury or machine damage. To reduce this risk, only install accessories recommended for this machine by Grizzly.

NOTICE

Refer to our website or latest catalog for additional recommended accessories.

T25206—11 Pc. Carbide Bit Set 5/16"
This 11-Pc. Carbide-Tipped Tool Bit Set includes a wide variety of tool types for just about any machining operation. This set also includes two boring bars. Boring bars measure 4 7/8" long. Shank size for all is 5/16".

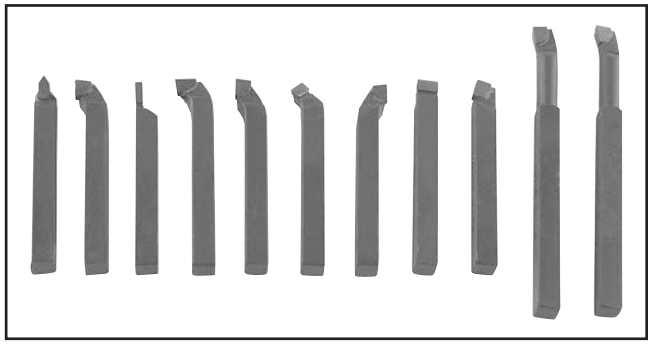


Figure 115. T25206 11-Pc. carbide-tipped tool set.

H2987—½" Bent Lathe Dog
H2988—1" Bent Lathe Dog
H2989—1½" Bent Lathe Dog
H2990—2" Bent Lathe Dog
H2991—3" Bent Lathe Dog

Figure 116. Model H2987 ½" Bent Lathe Dog.

T26599—Optional Stand for G0768/G0769
- Size: 29½" W x 32" H x 16" D
- Drawers: 12" W x 8" H x 12" D

Figure 117. T26599 Stand for G0768/G0769.

SB1365—South Bend Way Oil-ISO 68
T23964—Moly-D Multi-purpose NLGI#2 Grease

Figure 118. Recommended products for machine lubrication.

order online at www.grizzly.com or call 1-800-523-4777

G9361—Heavy-Duty Triple Bearing Live Center MT#2

This Triple Bearing Live Center is hardened to 61-65 Rockwell and has a unique head driving mechanism that prevents dust, chips, and coolant from entering the internal workings. Made with precision, high-quality bearings, this live center has an accuracy of 0.0003".

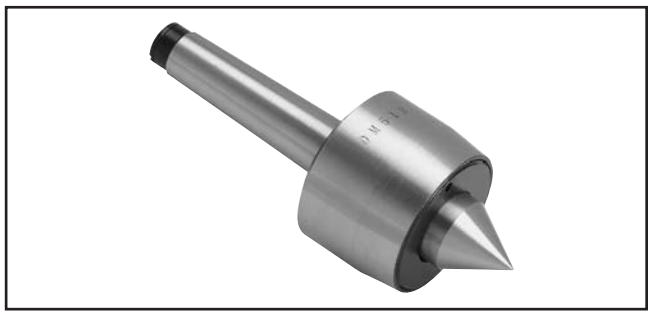


Figure 119. G9361 MT#2 Live Center.

G9788—4-Pc. Measuring Tool Set

This is the set you need for accurate measurements. Includes a stainless steel 6" dial caliper, a 6" scale with inch scale on one side and a metric scale on the other, a 1" carbide-tipped micrometer with vernier scale, and a 4" precision square with beveled edge. Comes with molded case and micrometer adjustment wrench.

Figure 120. G9788 4-Pc. Measuring Tool Set.

H7991—Mini Mag Base Indicator Set

Set features a 7 Jewel indicator with 0.0005" resolution. The mini magnetic base measures 1 3/16" x 1 3/16" x 1 3/8" and includes a single lock knob for easy setups. Includes 2 dovetail tool posts and a protective plastic case.

Figure 121. H7991 Mini Mag Base Indicator Set.

H5930—4-Pc. Center Drill Set 60°
H5931—4-Pc. Center Drill Set 82°

Double-ended HSS Center Drills are precision ground. Each set includes sizes 1–4.

SIZE	BODY DIA.	DRILL DIA.	OVERALL LENGTH
1	1/8"	3/64"	1 1/4"
2	3/16"	5/64"	1 7/8"
3	1/4"	7/64"	2"
4	5/16"	1/8"	2 1/8"

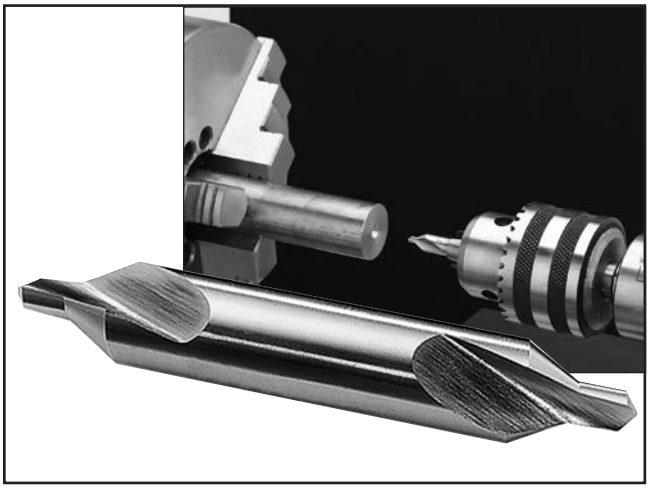


Figure 122. HSS ground center-drill sets.

T10253—2" Mini Self-Centering Vise with Swivel Base
Ideal for holding small parts and model making. Has self-centering jaws and adjustable gib on a dovetailed way. 2 1/16" jaw opening, 2" jaw width, 2 5/8" crank handle, and base swivels 360°. Overall size is 6 3/4" L x 4" W x 3 3/8" H with handle removed.

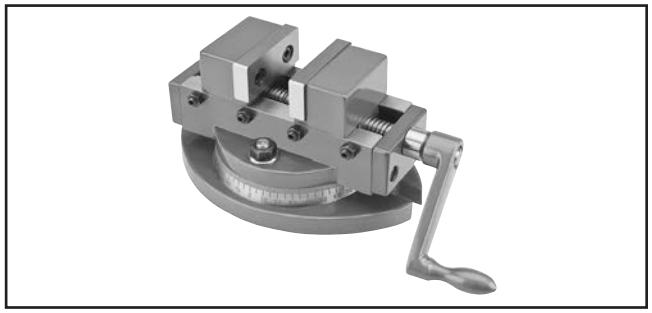


Figure 123. T10253 2" Mini Self-Centering Vise.

4-Flute C-2 Grade Carbide End Mills
These American-made 4-flute Carbide End Mills feature standard cutting lengths and nominal minus diameter tolerances. Recommended for profiling and finishing non-ferrous materials.

Model	Cutting Dia.	Flute Lgth	OA Lgth
H3649	1/16"	3/16"	1 1/2"
H3650	3/32"	3/8"	1 1/2"
H3651	1/8"	1/2"	1 1/2"
H3652	5/32"	9/16"	2"
H3653	3/16"	5/8"	2"
H3654	7/32"	5/8"	2 1/2"
H3655	1/4"	3/4"	2 1/2"
H3656	9/32"	3/4"	2 1/2"
H3657	5/16"	13/16"	2 1/2"
H3658	3/8"	7/8"	2 1/2"
H3659	7/16"	1"	2 3/4"
H3660	1/2"	1"	3"

Figure 124. 4-flute C-2 grade carbide end mills.

H6195—3" Rotary Table w/ Clamps
For horizontal or vertical use. 3" diameter table rotates 360°. Low profile—only 1.670" tall. 4 5/16" T-slots. 1:36 ratio or 10° per handwheel revolution. Scale reads to 15 minutes. Has brass lock knob. Table height in horizontal position: 1 5/8"; in vertical position: 3 1/4".

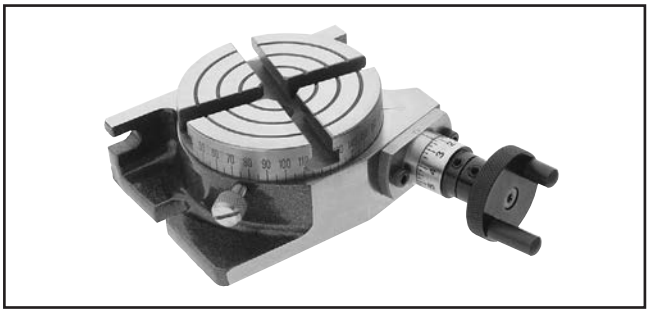


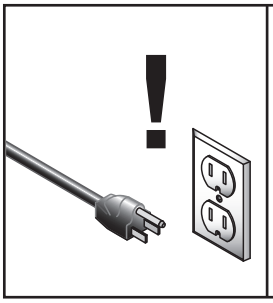
Figure 125. H6195 3" Rotary Table w/Clamps.

MT#2 End Mill Holders
Hold your end mills in the Model G0769 spindle with these quality end mill holders. Sized for various end mill shanks.

Model	MT	Drawbar	Size
T25703	#2	3/8"-16 TPI	3/16"
T25704	#2	3/8"-16 TPI	3/8"
T25705	#2	3/8"-16 TPI	1/2"
T25706	#2	3/8"-16 TPI	5/8"

Figure 126. MT#2 end mill holders.

SECTION 7: MAINTENANCE



⚠WARNING

Always disconnect power to the machine before performing maintenance. Failure to do this may result in serious personal injury.

Schedule

Ongoing

To maintain a low risk of injury and proper machine operation, if you ever observe any of the items below, shut down the machine immediately and fix the problem before continuing operations:

- Loose mounting bolts or fasteners.
- Worn, frayed, cracked, or damaged wires.
- Guards or covers removed.
- Emergency Stop button not working correctly or not requiring you to reset it before starting the machine again.
- Damaged or malfunctioning components.

Daily, Before Operations

- Add oil to the ball oilers (**Page 72**).
- Lubricate the leadscrew and carriage rack (**Page 73**).
- Lubricate the bedways (**Page 73**).
- Clean/lubricate the cross slide and compound slide (**Page 73**).
- Disengage the half nut on the carriage (to prevent crashes upon startup).
- Lubricate column ways—G0769 Only (**Page 75**).
- Lubricate quill outside surface—G0769 Only (**Page 75**).

Daily, After Operations

- Press the Emergency Stop button (to prevent accidental startup).
- Vacuum/clean all chips and swarf from bed, slides.
- Wipe down all unpainted or machined surfaces with an oiled rag.

Every 90 Hours of Operation

- Lubricate quill rack—G0769 Only (**Page 75**).
- Lubricate headstock gears—G0769 (**Page 76**).

Every 120 Hours of Operation

- Lubricate Z-axis leadscrew—G0769 Only (**Page 76**).

Annually

- Lubricate end gears (**Page 74**).

Cleaning/Protecting

Because of its importance, we recommend that the cleaning routine be planned into the workflow schedule.

Typically, the easiest way to clean swarf from the machine is to use a brush and wet/dry shop vacuum that are dedicated for this purpose. The small chips left over after vacuuming can be wiped up with a slightly oiled rag. Avoid using compressed air to blow off chips, as this may drive them deeper into the moving surfaces or cause sharp chips to fly into your face or hands.

All unpainted and machined surfaces should be wiped down daily to keep them rust free and in top condition. This includes any surface that is vulnerable to rust if left unprotected. Use a quality ISO 68 way oil (see **Page 68** for offerings from Grizzly) to prevent corrosion.

Lubrication

The lathe has metal-to-metal sliding surfaces that require regular lubrication to maintain smooth movement and ensure long-lasting operation.

Other than the lubrication points covered in this section, all other bearings are internally lubricated and sealed at the factory. Simply leave them alone unless they need to be replaced.

Before performing any lubrication task, DISCONNECT MACHINE FROM POWER!

We recommend using Model SB1365 Way Oil or equivalent (see **Page 68**) for most lubrication tasks.

Lubrication Frequency

Lubrication Task	Frequency	Page
Ball Oilers	Daily	**This Page**
Leadscrew & Carriage Rack	Daily	**73**
Bedways	Daily	**73**
Feed Gearbox	Annually	**73**
Cross Slide & Compound Slide	Daily	**73**
End Gears	Annually	**74**
Mill Column Ways	Daily	**75**
Mill Quill Outside Surface	Daily	**75**
Mill Quill Rack	90 Hrs.	**75**
Mill Z-Axis Leadscrew	120 Hrs.	**76**
Mill Headstock Gears	90 Hrs.	**76**

NOTICE

The recommended lubrication is based on light-to-medium usage. Since lubrication helps to protect value and operation of machine, these lubrication tasks may need to be performed more frequently than recommended, depending on usage.

Failure to follow reasonable lubrication practices as instructed in this manual could lead to premature failure of machine components and will void the warranty.

Items Needed	Qty
Clean Rag	As Needed
Mineral Spirits	As Needed
Stiff Brush	1
Pump-Type Oil Can w/Plastic Cone Tip	1

Ball Oilers

Lube Type ..... ISO 32 Equivalent
Lube Amount ..... 1 or 2 Squirts/Fill
Lubrication Frequency ..... Daily

This lathe has four ball oilers that should be oiled on a daily basis before beginning operation.

Proper lubrication of ball oilers is done with a pump-type oil can that has a plastic or rubberized cone tip. We do not recommend using metal needle or lance tips, as they can push the ball too far into the oiler, break the spring seat, and lodge the ball in the oil galley.

Lubricate the ball oilers before and after machine use, and more frequently under heavy use. When lubricating ball oilers, first clean the outside surface to remove any dust or grime. Push the tip of the oil can nozzle against the ball oiler to create a hydraulic seal, then pump the oil can once or twice. If you see sludge and contaminants coming out of the lubrication area, keep pumping the oil can until the oil runs clear. When finished, wipe away any excess oil.

Refer to **Figure 127** to identify the location of each ball oiler.

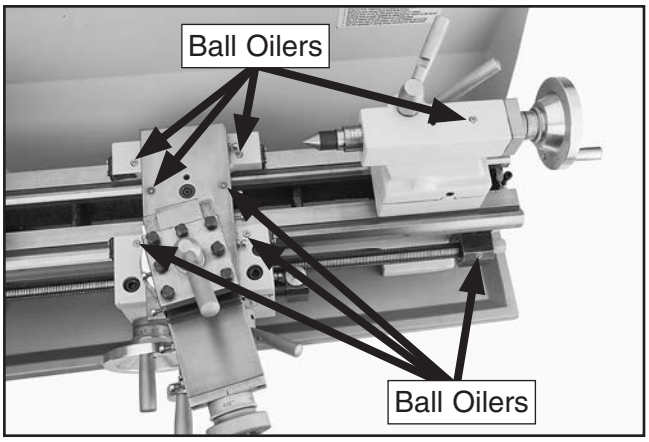


Figure 127. Ball oilers.

Leadscrew & Carriage Rack

Lube Type.. Model SB1365 or ISO 68 Equivalent
Lube Amount ..... As Needed
Lubrication Frequency ..... Daily

Before lubricating the leadscrew and carriage rack (see **Figure 128**), clean them first with mineral spirits. Use a stiff brush to help remove any debris or grime. Apply a thin coat of oil along the entire length of the carriage rack. Use a stiff brush to make sure oil is applied into the leadscrew threads.

Note: *In some environments, abrasive material can become caught in the leadscrew lubricant and drawn into the half nut. In this case, lubricate the leadscrew with a quality dry lubricant.*

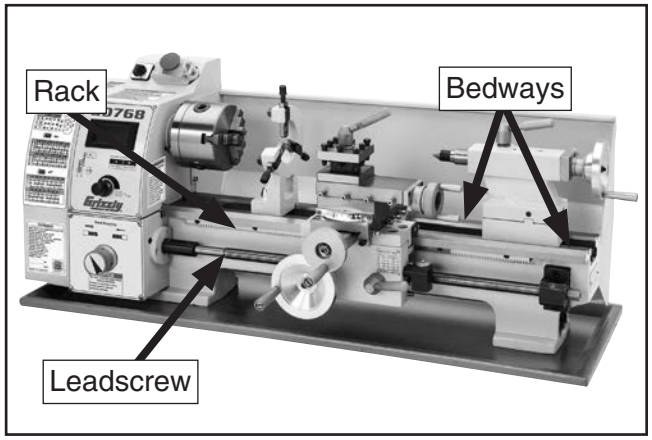


Figure 128. Leadscrew, rack and bedways.

Bedways

Lube Type.. Model SB1365 or ISO 68 Equivalent
Lube Amount ..... As Needed
Lubrication Frequency ..... Daily

Before lubricating the bedways (see **Figure 128**), clean them with mineral spirits. Apply a thin coat of oil along the length of the bedways. Move the steady rest, carriage, and tailstock to access the entire length of the bedways.

Feed Gearbox

Lube Type..Model T23964 or NLGI#2 Equivalent
Frequency..... Annually or As Needed

The gearbox can be quickly lubricated (as necessary or if noisy) by removing the set screw shown in **Figure 107** and adding a shot or two of grease from a grease gun. The grease inside the gearbox will eventually need to be replaced. To do this, remove the gearbox cover, use mineral spirits and a stiff brush to clean gears, allow them to dry, reapply new grease, and re-install cover.

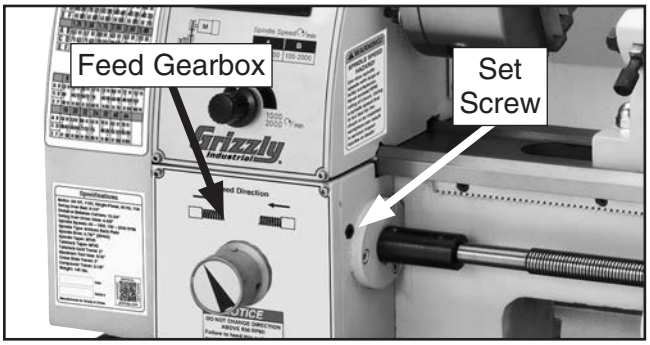


Figure 129. Feed gearbox quick lubrication location.

Cross Slide & Compound Slide

Lube Type.. Model SB1365 or ISO 68 Equivalent
Lube Amount .....Thin Coat
Lubrication Frequency ..... Daily

Use the handwheels to separately move the cross slide and compound rest as far forward as possible (see **Figure 130**). Clean the slides with mineral spirits and wipe down with a rag. Apply lubricant and move the slides back and forth to distribute the oil.

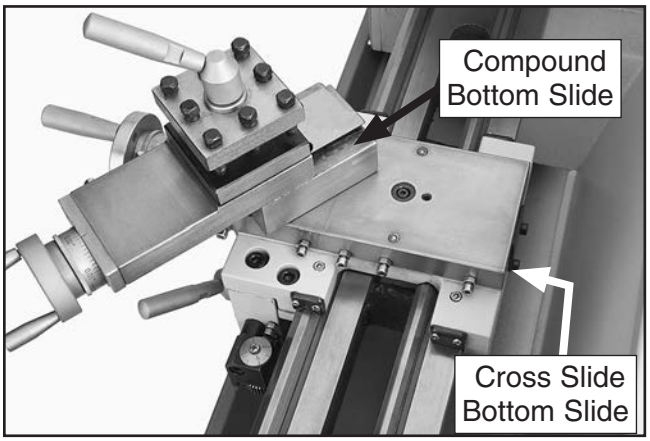


Figure 130. Location of bottom slides.

End Gears

Lube Type..Model T23964 or NLGI#2 Equivalent
Frequency..... Annually or When Changing

The end gears, shown in **Figure 131**, should always have a thin coat of heavy grease to minimize corrosion, noise, and wear. Wipe away excess grease that could be thrown onto the V-belts and reduce optimal power transmission from the motor.

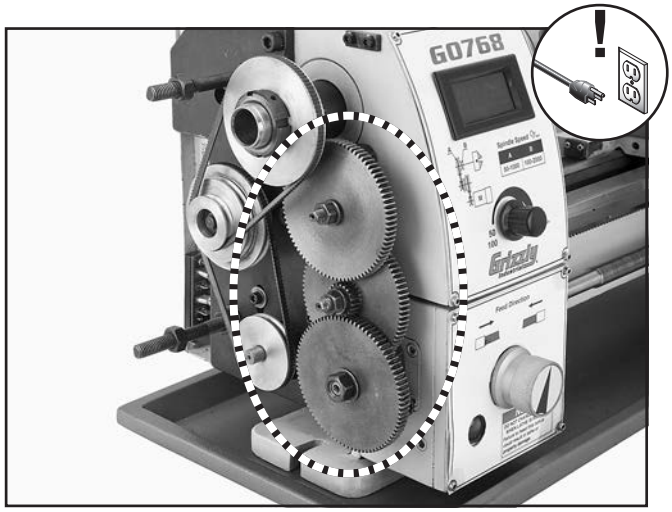


Figure 131. End gears.

Handling & Care

Make sure to clean and lubricate any gears you install or change. Be very careful during handling and storage—the grease coating on the gears will easily pickup dirt or debris, which can then spread to the other gears and increase the rate of wear.

Make sure the end cover remains installed whenever possible to keep the gears free of dust or debris from the outside environment.

Lubricating

1. DISCONNECT MACHINE FROM POWER!
2. Remove end gear cover and all end gears shown in **Figure 131**.
3. Clean end gears thoroughly with mineral spirits to remove old grease. Use a small brush if necessary to clean between teeth.
4. Clean shafts, and wipe away any grease splatters in vicinity and on inside of end cover.
5. Using a clean brush, apply a thin layer of white lithium grease on the gears. Make sure to get grease between gear teeth, but do not fill teeth valleys.
6. Apply a small dab of grease to each gear shaft.
7. Install end gears and mesh them together with an approximate 0.002"–0.004" backlash. Once gears are meshed together, apply a small dab of grease between them where they mesh together—this grease will be distributed when gears rotate and re-coat any areas scraped off during installation.
8. Re-install end cover before re-connecting machine to power.

Column Ways (G0769)

Lube Type.. Model SB1365 or ISO 68 Equivalent
Lube Amount .....Thin Coat
Lubrication Frequency ..... Daily

Regular lubrication will ensure your milling headstock performs at its highest potential. Regularly wipe table and column ways with recommended lubrication, then move components back and forth several times to ensure smooth movements (see **Figure 132**).

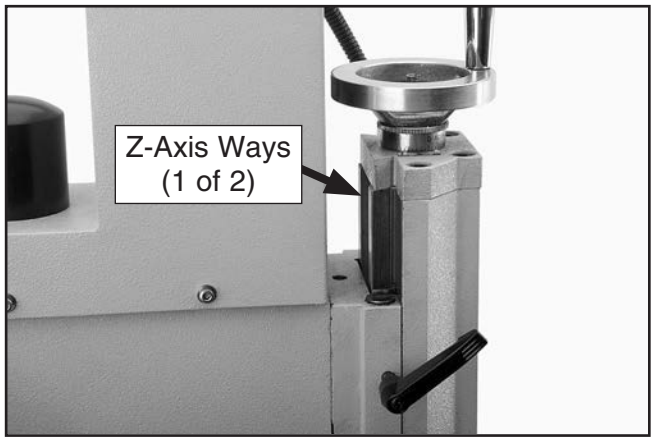


Figure 132. Z-axis way lubrication location.

Quill Outside Surface

Lube Type.. Model SB1365 or ISO 68 Equivalent
Lube Amount .....Thin Coat
Lubrication Frequency ..... Daily

Without disturbing grease on quill rack, clean outside smooth surface of quill (see **Figure 133**) with mineral spirits and shop rags.

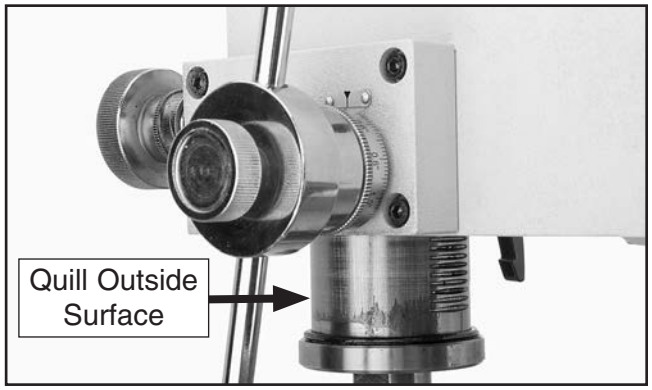


Figure 133. Outside surface of quill.

When dry, apply thin coat of lubricant to smooth surface, then move spindle up and down to evenly distribute oil.

Quill Rack

Lube Type..Model T23964 or NLGI#2 Equivalent
Lube Amount .....Thin Coat
Lubrication Frequency ..... 90 hrs. of Operation

Move quill all the way down to gain full access to quill rack (see **Figure 134**), lock the quill in place, then clean teeth with mineral spirits, shop rags, and a brush.

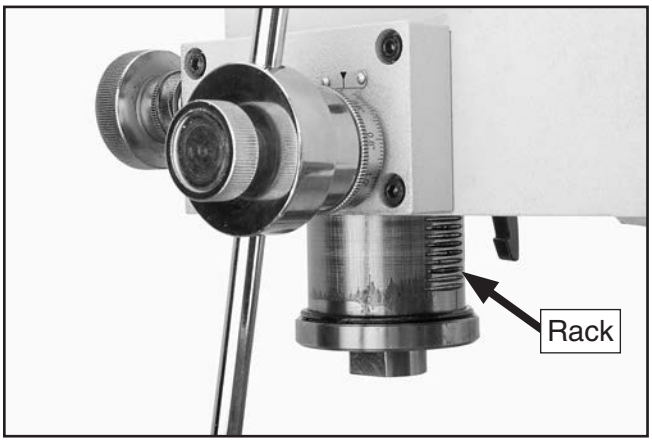


Figure 134. Quill rack location.

When dry, use a brush to apply a thin coat of grease to teeth, then raise/lower the quill several times to evenly distribute grease.

Note: *Re-apply oil that may have been removed during the cleaning process to the quill surface around the rack.*

Z-Axis Leadscrew (G0769)

Lube Type..Model T23964 or NLGI#2 Equivalent
Lube Amount.....Thin Coat
Lubrication Frequency..... 120 hrs. of Operation

Lower headstock approximately ¾ of the way down the Z-axis ways, as shown in **Figure 135**.

Figure 135. Z-axis leadscrew location.

Use mineral spirits and a brush to clean as much existing grease and debris off of Z-axis leadscrew shown in **Figure 135** as possible. When dry, apply NLGI#2 grease to exposed leadscrew threads. Move headstock through its full range of motion several times to disperse grease along full length of leadscrew.

Headstock Gears (G0769)

Lube Type..Model T23964 or NLGI#2 Equivalent
Lube Amount.....Thin Coat
Lubrication Frequency..... 90 hrs. of Operation

To lubricate headstock gears:

1. Remove cap screw and headstock gear access cover, as shown in **Figure 136**.

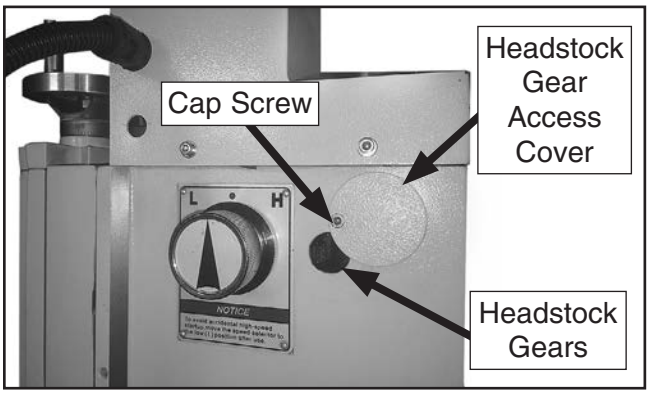


Figure 136. Headstock access cover and cap screw location.

2. Using small brush, apply thin coat of grease to headstock gears.

3. Operate mill/drill in both high and low gear settings to work grease through gears.

4. Re-install access cover and cap screw removed in **Step 1**.

Machine Storage

To prevent the development of rust and corrosion, the lathe must be properly prepared if it will be stored for a long period of time. Doing this will ensure the lathe remains in good condition for later use.

Preparing Machine for Storage

1. DISCONNECT MACHINE FROM POWER!

2. Thoroughly clean all unpainted, bare metal surfaces, then apply a liberal coat of way oil, heavy grease, or rust preventative. Take care to ensure these surfaces are completely covered and that rust preventative or grease is kept off of painted surfaces.

3. Lubricate machine as outlined in lubrication section. Be sure to use an oil can to purge all ball oilers and oil passages with fresh oil.

4. Place a few moisture absorbing desiccant packs inside electrical box.

5. Cover machine and place it in a dry area that is out of direct sunlight and away from hazardous fumes, paint, solvents, or gas. Fumes and sunlight can bleach or discolor paint.

6. Every few months, rotate by hand all gear-driven components a few times in several gear selections. This will keep bearings, bushings, gears, and shafts well lubricated and protected from corrosion—especially during winter months.

   Slide carriage, tailstock, and steady rest down lathe bed to make sure that way spotting is not beginning to occur. Move mill headstock up and down column (Model G0769 only).

Bringing Machine Out of Storage

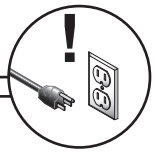
1. Remove moisture-absorbing desiccant packs from electrical box.

2. Repeat **Test Run** and **Spindle Break-In** procedures, beginning on **Page 27**.

SECTION 8: SERVICE

Review the troubleshooting and procedures in this section if a problem develops with your machine. If you need replacement parts or additional help with a procedure, call our Technical Support. **Note:** *Please gather the serial number and manufacture date of your machine before calling.*

Troubleshooting



Motor & Electrical

Symptom	Possible Cause	Possible Solution
Machine does not start or a circuit breaker trips.	1. Emergency stop button engaged or at fault.	1. Press side tab in and lift switch cover. Press On button to reset; replace if not working properly.
	2. Incorrect power supply voltage.	2. Ensure correct power supply voltage.
	3. Blown fuse.	3. Replace fuse/ensure no shorts (**Page 85**).
	4. Power supply circuit breaker tripped or fuse blown.	4. Ensure circuit is sized correctly and free of shorts. Reset circuit breaker or replace fuse.
	5. Wiring open/has high resistance.	5. Check/fix broken, disconnected, or corroded wires.
	6. On/Off switch at fault.	6. Replace switch.
	7. Spindle speed dial in OFF position or at fault.	7. Turn spindle speed dial past "0". Ensure dial has correct voltage. Replace if faulty.
	8. Spindle direction switch turned to "0" or at fault.	8. Turn spindle direction switch to "F" or "R". Ensure dial has correct voltage. Replace if faulty.
	9. Lathe/mill selector switch in neutral, or at fault.	9. Turn lathe/mill selector switch to "lathe" or "mill" mode. Replace if faulty.
	10. Motor brushes at fault.	10. Remove/replace brushes (**Page 86**).
	11. Motor at fault.	11. Test/repair/replace.
	12. Spindle rotation switch at fault.	12. Test/replace switch.
Machine stalls or is underpowered.	1. Machine undersized for task.	1. Use sharp bits/chisels at correct angle; reduce feed rate/depth of cut; use coolant if possible.
	2. Feed rate/cutting speed too fast.	2. Decrease feed rate/cutting speed.
	3. Wrong workpiece material.	3. Use correct type/size of metal.
	4. Timing belt slipping.	4. Tension/replace belt; ensure pulleys are aligned.
	5. Motor overheated.	5. Use sharp bits; reduce feed rate/depth of cut.
	6. Computer board at fault.	6. Clean motor, let cool, and reduce workload.
	7. Motor speed dial at fault.	7. Test and replace if at fault.
	8. Motor brushes at fault.	8. Remove/replace brushes (**Page 86**).
	9. Pulley/sprocket slipping on shaft.	9. Replace loose pulley/shaft.
	10. Motor bearings at fault.	10. Test by rotating shaft; rotational grinding/loose shaft requires bearing replacement.
	11. Motor at fault.	11. Test/repair/replace.
Machine has vibration or noisy operation.	1. Motor or component loose.	1. Inspect/replace damaged bolts/nuts, and retighten with thread locking fluid.
	2. Bit chattering.	2. Replace/sharpen bit; index bit to workpiece; use correct feed rate and cutting RPM; retract tool holder and position workpiece closer.
	3. V-belt(s) worn or loose.	3. Inspect/replace belts with a new matched set.
	4. Motor fan rubbing on fan cover.	4. Fix/replace fan cover; replace loose/damaged fan.
	5. Motor mount loose/broken.	5. Tighten/replace.

Lathe Operation

Symptom	Possible Cause	Possible Solution
Bad surface finish.	1. Wrong spindle speed or feed rate. 2. Dull tooling or poor tool selection. 3. Tool height not at spindle centerline. 4. Too much play in gibs.	1. Adjust for appropriate spindle speed and feed rate. 2. Sharpen tooling or select a better tool for the intended operation. 3. Adjust tool height to spindle centerline (see **Page 45**). 4. Tighten gibs (see **Page 83**).
Tapered tool difficult to remove from tailstock quill.	1. Quill not fully retracted into tailstock. 2. Contaminants not removed from taper before inserting into quill.	1. Turn quill handwheel until tapered tool is forced out of quill. 2. Clean taper and bore, then re-install tool.
Cross slide, compound rest, or carriage feed has sloppy operation.	1. Ways loaded with shavings, dust, or grime. 2. Gibs are out of adjustment. 3. Handwheel loose or excessive backlash. 4. Leadscrew mechanism worn or out of adjustment.	1. Clean ways and relubricate. 2. Adjust gibs (see **Page 83**). 3. Tighten handwheel fasteners, adjust handwheel backlash to a minimum (see **Page 82**). 4. Adjust leadscrew to remove end play (see **Page 82**).
Cross slide, compound, or carriage handwheels hard to move.	1. Ways loaded with chips, dust, or grime. 2. Gibs are too tight. 3. Backlash setting too tight. 4. Bedways are dry. 5. Half nut lever engaged.	1. Clean ways and lubricate. 2. Loosen gibs slightly (see **Page 83**). 3. Slightly loosen backlash setting (see **Page 82**). 4. Lubricate bedways. 5. Disengage half nut lever for manual feeding.
Cutting tool or machine components vibrate excessively during cutting.	1. Tool holder not tight enough. 2. Cutting tool sticks too far out of tool holder; lack of support. 3. Gibs are out of adjustment. 4. Dull cutting tool. 5. Incorrect spindle speed or feed rate.	1. Check for debris, clean, and retighten. 2. Re-install cutting tool so no more than ⅓ of the total length is sticking out of tool holder. 3. Adjust gibs at affected component (see **Page 83**). 4. Replace or resharpen cutting tool. 5. Use the recommended spindle speed and feed rate.
Workpiece is tapered.	1. Headstock and tailstock not properly aligned.	1. Re-align tailstock to headstock spindle centerline (see **Page 39**).
Chuck jaws will not move or do not move easily.	1. Chips lodged in jaws or scroll plate.	1. Remove jaws, clean and lubricate scroll plate, then replace jaws.

Mill Operation

Symptom	Possible Cause	Possible Solution
Tool slips in spindle.	1. Tool is not fully drawn up into spindle taper. 2. Debris on tool or in spindle taper. 3. Taking too big of cut.	1. Tighten drawbar (Do not overtighten). 2. Clean collet and spindle taper. 3. Lessen depth of cut and allow chips to clear.
Breaking tools or cutters.	1. Spindle speed/feed rate is too fast. 2. Cutting tool too small. 3. Cutting tool getting too hot. 4. Taking too big of a cut. 5. Spindle extended too far down.	1. Set spindle speed correctly (**Page 67**) or use slower feed rate. 2. Use larger cutting tool and slower feed rate. 3. Use coolant fluid or oil for appropriate application if possible. 4. Lessen depth of cut and allow chips to clear. 5. Fully retract spindle and lower headstock. This increases rigidity.
Workpiece vibrates or chatters during operation.	1. Workpiece not secure. 2. Spindle speed/feed rate is too fast. 3. Spindle extended too far down.	1. Properly clamp workpiece on table or in vise. 2. Set spindle speed correctly (**Page 67**) or use slower feed rate. 3. Fully retract spindle and lower headstock. This increases rigidity.
Cross slide table is hard to move.	1. Chips have loaded up on ways. 2. Ways are dry and need lubrication. 3. Gibs are too tight.	1. Frequently clean away chips that load up during milling operations. 2. Lubricate ways (**Page 73**). 3. Adjust gibs (see **Page 83**).
Bad surface finish.	1. Spindle speed/feed rate is too fast. 2. Using dull or incorrect cutting tool. 3. Wrong rotation of cutting tool. 4. Workpiece not secure. 5. Spindle extended too far down.	1. Set spindle speed correctly (**Page 67**) or use a slower feed rate. 2. Sharpen cutting tool or select one that better suits operation. 3. Check for proper cutting rotation for cutting tool. 4. Properly clamp workpiece on table or in vise. 5. Fully retract spindle and lower headstock. This increases rigidity.

Tensioning & Replacing V-Belts

V-belts stretch and wear with use, so it is important to routinely monitor belt tension. V-belts that are improperly tensioned or exposed to grease/oil will slip and poorly transmit power from the motor. To ensure optimal power transmission, inspect belts on a monthly basis to verify they are properly tensioned and free of oil/grease. Replace V-belts when they become cracked, frayed, or glazed.

Tools Needed	**Qty**
Hex Wrench 3, 4mm	1 Ea.
Open-End Wrench 10, 13 mm	1 Ea.

To adjust tension or replace V-belts:

1. DISCONNECT MACHINE FROM POWER!

2. Remove end cover and electrical panel (see **Figure 137**).

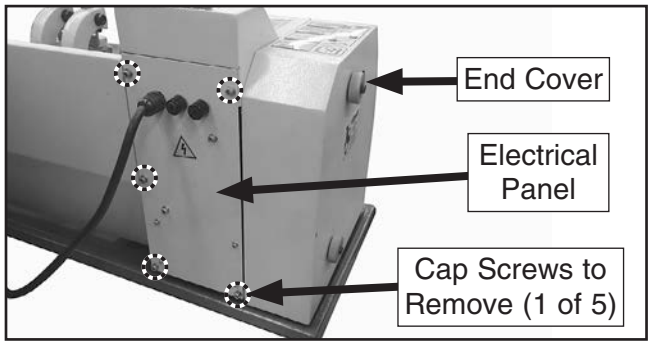


Figure 137. Location of parts for removing panel.

3. Using flat 10mm wrench provided with lathe, hold pivot block bolt shown in **Figure 138**, and loosen hex nut with 13mm wrench.

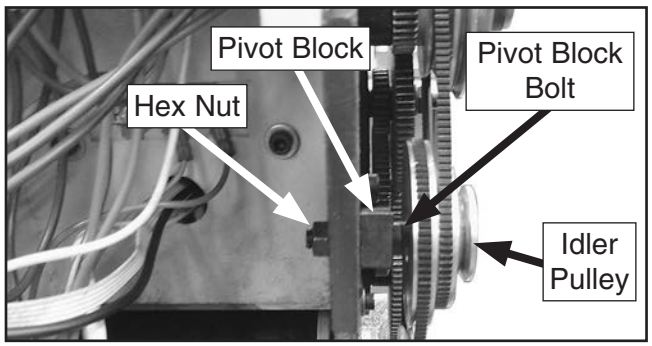


Figure 138. Pivot block bolt and hex nut for idler pulley adjustment.

4. Turn tensioner screw (see **Figure 139**) clockwise to tension V-belts or counterclockwise to loosen V-belts.

   —If replacing V-belts, loosen idler pulley and carefully roll upper and lower V-belts off of pulleys, then re-install new V-belts in same manner.

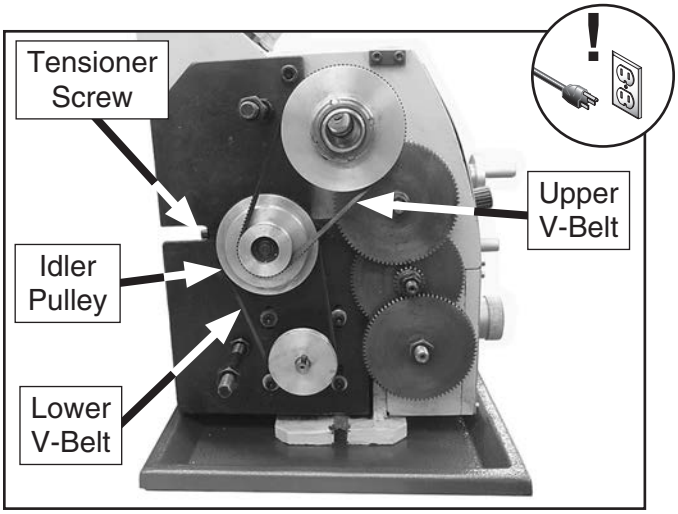


Figure 139. Tensioner screw and V-belts.

5. Tension V-belts until there is approximately ⅛" deflection when pushed with moderate pressure, as shown in **Figure 140**.

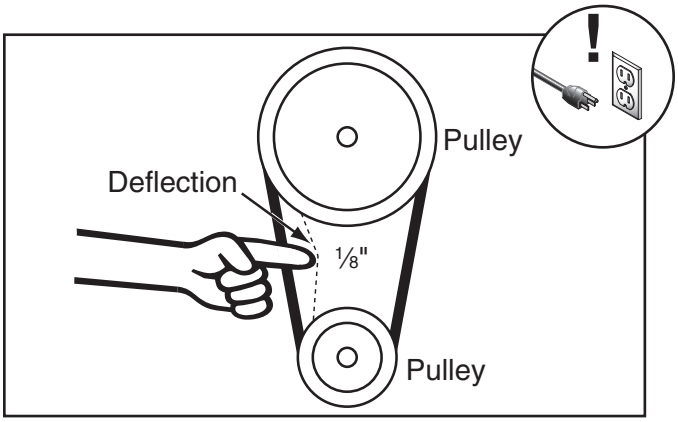


Figure 140. Correct V-belt deflection.

   —If there is more than ⅛" deflection when the V-belts are pushed with moderate pressure, adjust tension until it is correct.

6. Tighten pivot block bolt and hex nut loosened in **Step 3**.

7. Re-install and secure end cover and electrical panel.

Adjusting Backlash

Backlash is the amount of free play felt while changing rotation directions with the handwheel. This can be adjusted on the cross slide leadscrew. Before beginning any adjustment, make sure all associated components are cleaned and lubricated and locks are loose.

When adjusting backlash, tighten the components enough to remove backlash, but not so much that the components bind the leadscrew, making it hard to turn. Overtightening will cause excessive wear to the nut and leadscrew.

NOTICE

Reducing backlash to less than 0.002" is impractical and can lead to accelerated wear in leadscrew and other components. Avoid temptation to overtighten leadscrew nut or set screw while adjusting.

Cross Slide

Tools Needed: **Qty**
Hex Wrench 3mm 1

The cross slide backlash is adjusted by tightening and loosening the set screw shown in **Figure 139**. The set screw adjusts the height of the leadscrew nut, taking up lash between the nut and leadscrew.

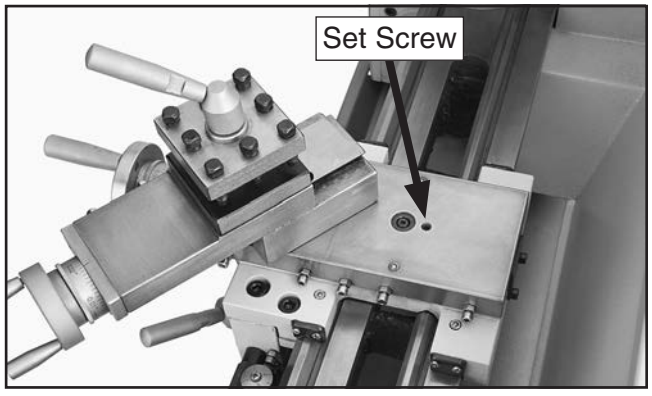


Figure 141. Cross slide backlash adjustment.

Move the cross slide handwheel back and forth and adjust backlash until it is approximately 0.002"–0.003", as indicated on the graduated dial.

Adjusting Leadscrew End Play

After a long period of time, you may find that the leadscrew develops excessive end play. This lathe is designed so that end play can be removed with a simple adjustment.

Tools Needed **Qty**
Hex Wrench 4mm 1
Open-End Wrench 14mm 1

To remove leadscrew end play:

1. DISCONNECT MACHINE FROM POWER!

2. Loosen set screw shown in **Figure 142** several turns.

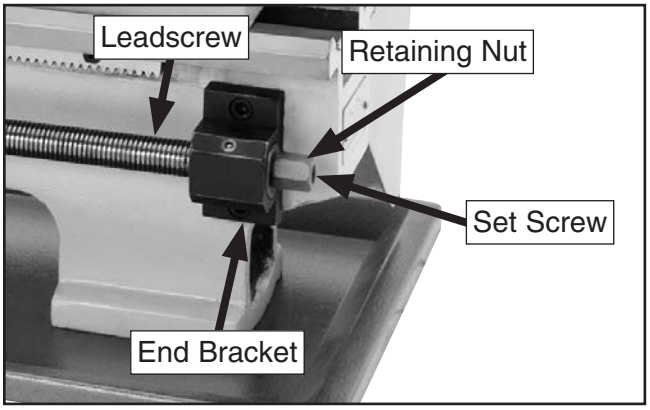


Figure 142. Leadscrew end play adjustments.

3. Tighten retaining nut with your fingers so it just contacts end bracket, then back nut off ⅛ turn.

4. Hold nut in position and tighten set screw against leadscrew until snug.

Adjusting Gibs

The goal of adjusting the gib screws is to remove sloppiness or "play" from the ways without over-adjusting them to the point where they become stiff and difficult to move.

In general, loose gibs cause poor finishes and tool chatter; however, over-tightened gibs cause premature wear and make it difficult to turn the handwheels.

The cross-slide and compound slide both use a straight gib, which is adjusted with cap screws and hex nuts along its length. The screws push the gib in to create more contact with the sliding surfaces. The Z-axis ways (G0769 only) use a tapered gib, which is adjusted with screws on each end.

The gib adjustment process usually requires some trial-and-error. Repeat the process as necessary until you find the best balance between loose and stiff movement. Most machinists find that the ideal gib adjustment is one where a small amount of drag or resistance is present, yet the handwheels are still somewhat easy to move.

Clean and lubricate the ways before beginning any adjustments. Refer to **Lubrication** on **Page 72** for instructions and lubricant specifications.

Tools Needed	**Qty**
Open-End Wrench 7mm	1
Hex Wrench 3mm	1
Flat Head Screwdriver #2	1

Adjusting Cross Slide and Compound Slide Gibs

1. DISCONNECT MACHINE FROM POWER!

2. Loosen hex nuts on side of cross slide or compound slide (see **Figures 143–144**).

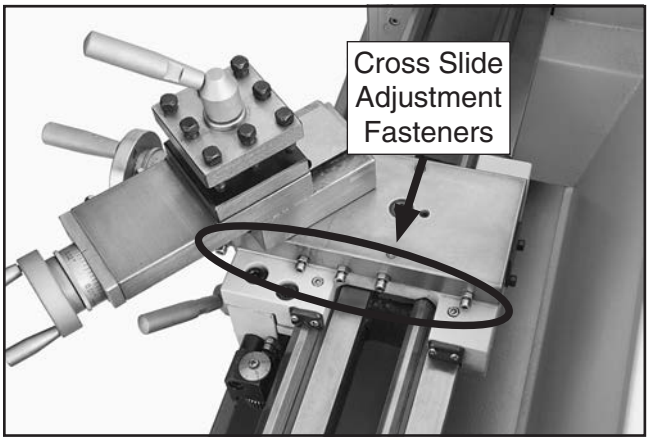


Figure 143. Cross slide gib adjustment hex nuts and cap screws.

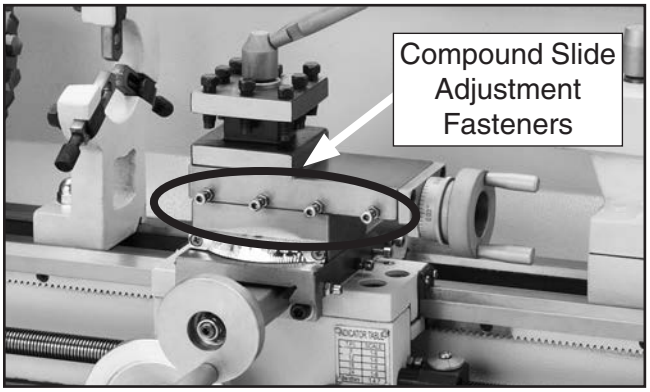


Figure 144. Compound slide gib adjustment hex nuts and cap screws.

3. Adjust all corresponding cap screws in small and equal increments, then test movement of slide by rotating handwheel.

Note: *Turning cap screws clockwise tightens the gib, and turning them counterclockwise loosens the gib.*

4. When satisfied with gib adjustment, use hex wrench to prevent set screws from moving, then retighten hex nuts to secure settings.

5. Re-check movement of slide and, if necessary, repeat **Steps 2–4**.

Adjusting Z-Axis Way Gib

Loosen one gib adjustment screw (see **Figure 145**) and tighten the opposing screw the same amount to move the gib, while at the same time using the handwheel to move the headstock until you feel a slight drag in the path of movement.

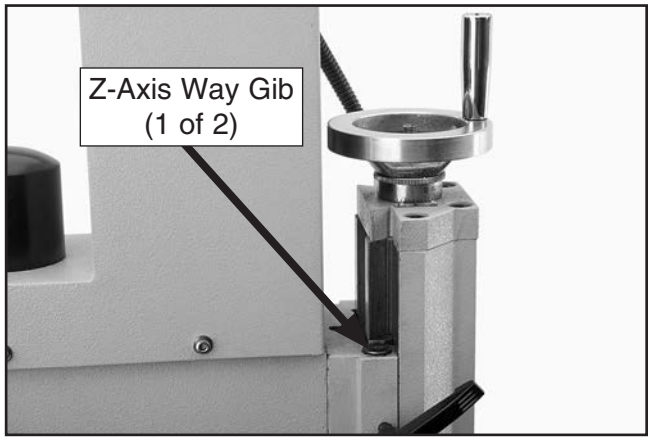


Figure 145. Location of top Z-axis way gib.

Adjusting Half Nut

The rigidity of the half nut engagement is adjusted by tightening or loosening the half nut gib screws. Adjust the half nut if it feels too loose or too tight when being engaged. Movement that is too stiff will accelerate wear. Movement that is too sloppy will produce inaccurate turning or threading results.

Tools Needed	Qty
Open-End Wrench 7mm	1
Hex Wrench 3mm	1

To adjust half nut:

1. DISCONNECT MACHINE FROM POWER!

2. Disengage half nut.

3. Loosen thread dial cap screw, tilt dial out of way, then secure to access gib screws and nuts (see **Figure 146**).

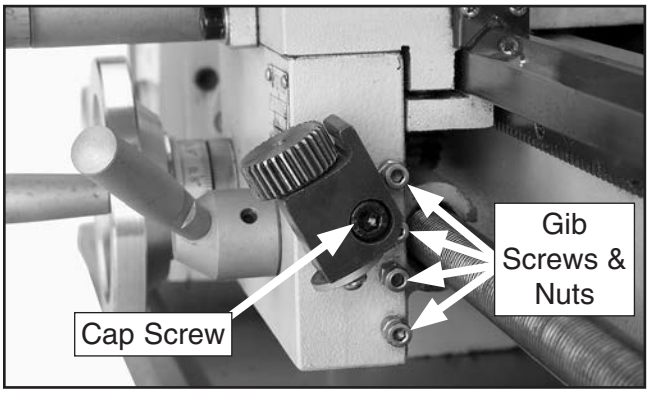


Figure 146. Half nut gib adjustment set screws.

4. Loosen gib nuts and adjust screws in small, even increments so one end of the gib does not become tighter than the other.

5. Engage/disengage half nut several times and notice how it feels. The adjustment is correct when half nut firmly and easily engages leadscrew while opening and closing.

6. Repeat **Steps 4–5**, if necessary, until satisfied with feel of half nut engagement.

7. Re-install thread dial so teeth mesh with leadscrew, then tighten cap screw.

Replacing Leadscrew Shear Pin

The longitudinal leadscrew is secured to the feed rate gearing in the headstock with the use of a soft-metal shear pin (see **Figure 147**). The shear pin is designed to break and disengage power to the leadscrew to help protect more expensive lathe components if you crash your carriage or take too large of a cut and overload the lathe.

Replacement shear pin part number: P0768334.

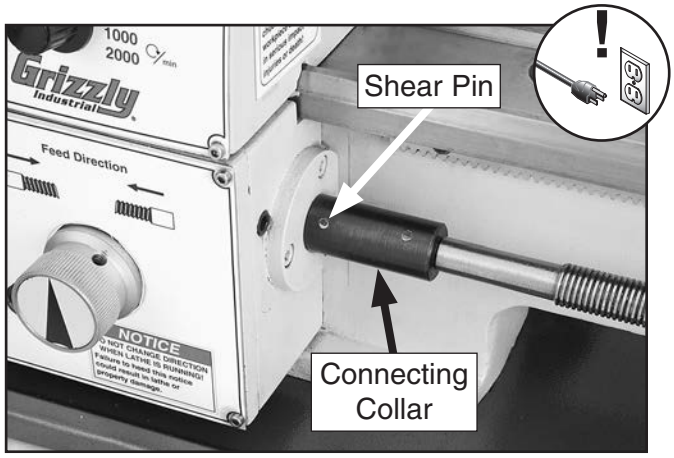


Figure 147. Longitudinal leadscrew shear pin.

Tools Needed	**Qty**
Hammer	1
Punch 3mm	1

To replace shear pin:

1. DISCONNECT MACHINE FROM POWER!

2. Rotate leadscrew so shear pin faces up and down. If connecting collar rotates independently from leadscrew, then rotate collar so shear pin hole aligns with those in leadscrew.

3. Use punch and hammer to drive out pieces of old shear pin.

4. Make sure hole in collar and leadscrew are aligned, then tap new shear pin completely through holes in collar and leadscrew.

Replacing Fuse

This machine features on-board fuses designed to protect sensitive electrical parts from thermal damage in the event of an overload. If the spindle does not start, replace the fuses.

The Model G0768 has two fuses, the Model G0769 has three fuses.

G0768 Replacement Fuses: (1) P0768906, (1) P0768911.
G0769 Replacement Fuses: (1) P0769906, (2) P0768911.

To replace fuses:

1. DISCONNECT MACHINE FROM POWER!

2. Unthread fuse holders (see **Figure 148**) by rotating them counterclockwise, then remove fuses.

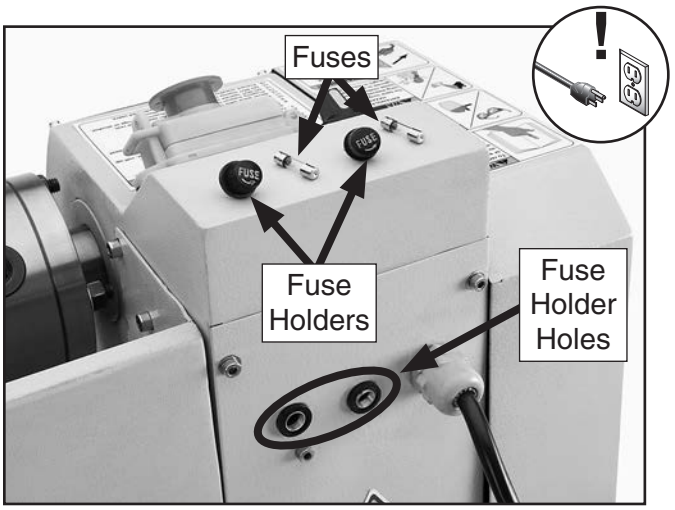


Figure 148. Fuse holders and fuses (Model G0768 shown).

3. Insert new fuses.

4. Re-install fuse holders.

Replacing Brushes

This machine is equipped with one (G0768) or two (G0769) universal motors that use carbon brushes to transmit electrical current inside the motor. These brushes are considered to be regular "wear items" or "consumables" that will eventually need to be replaced. The frequency of this replacement is directly related to how much the motor is used and how hard it is pushed.

Replace the carbon brushes when the motor no longer reaches full power, or when the brushes measure less than ¼" long (new brushes are ⅝" long).

Tools Needed	Qty
Hex Wrench 3, 4mm	1 Ea
Flat Head Screwdriver #2	1
Phillips Head Screwdriver #2	1

G0768/G0769 Lathe Motor Replacement Brushes: P0768046
G0769 Mill Motor Replacement Brushes: P0769786

Replacing Lathe Motor Brushes

1. DISCONNECT MACHINE FROM POWER!

2. Remove end cover, electrical panel, and back splash to access motor brushes.

   Note: *Carefully handle the electrical panel. Try to avoid straining any wires so they do not disconnect. On Model G0769 remove mill motor cable harness and cable clamp from back splash before removing it.*

3. Loosen tensioner screw several turns (see **Figure 149**) to remove tension on V-belts.

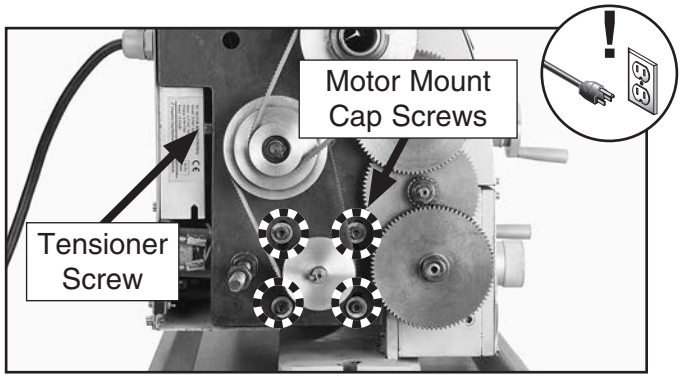


Figure 149. Motor mounting screws (Model G0768 shown).

4. Remove motor mount cap screws (see **Figure 149**).

5. Rotate motor to access top motor brush shown in **Figure 150**.

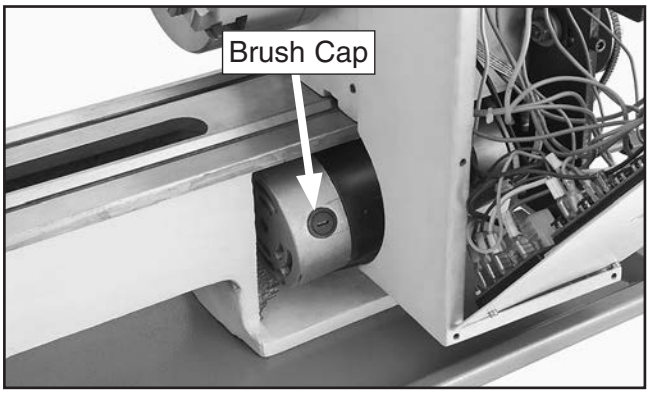


Figure 150. Location of top motor brush cap (Model G0768 shown).

6. Unscrew brush cap and carefully remove brush from motor (see **Figure 151**).

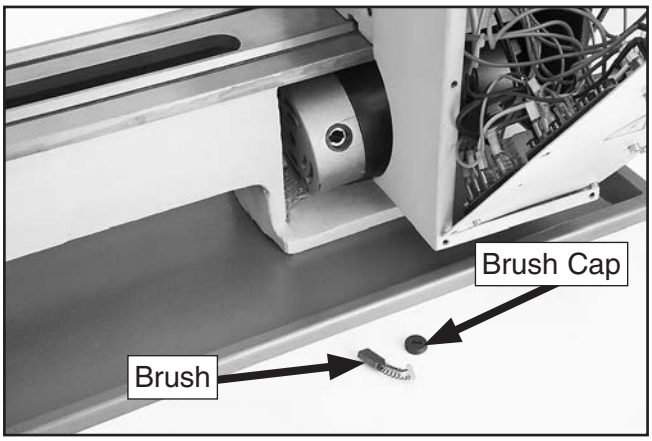


Figure 151. Top motor brush components removed (Model G0768 shown).

7. Install new brush and re-install brush cap.

8. Repeat **Steps 5–7** to replace bottom motor brush.

9. Re-install motor with screws removed earlier.

10. Tension V-belts (refer to **Tensioning V-Belts** on **Page 81** for details).

11. Re-install back splash, electrical panel, and end cover.

12. **G0769 Only**: Re-install cable harness onto back splash with cable clamp.

Replacing Mill Motor Brushes (G0769)

1. DISCONNECT MACHINE FROM POWER!

2. Remove drawbar cap, then remove motor cover by removing cap screws (see **Figure 152**).

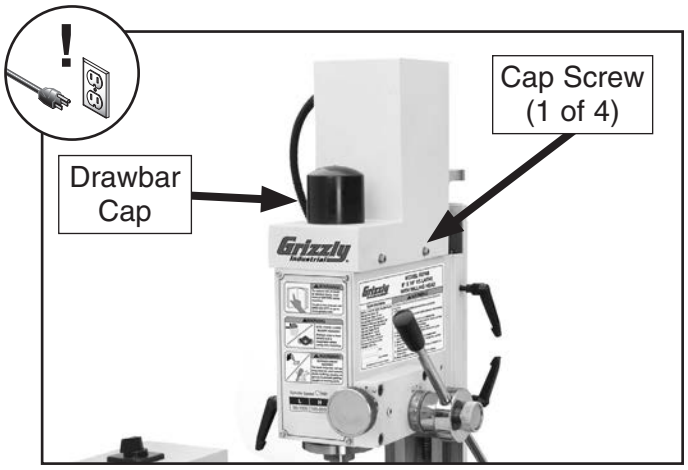


Figure 152. Location of mill motor cover screws.

3. Unscrew front brush cap and carefully remove brush from motor (see **Figure 153**).

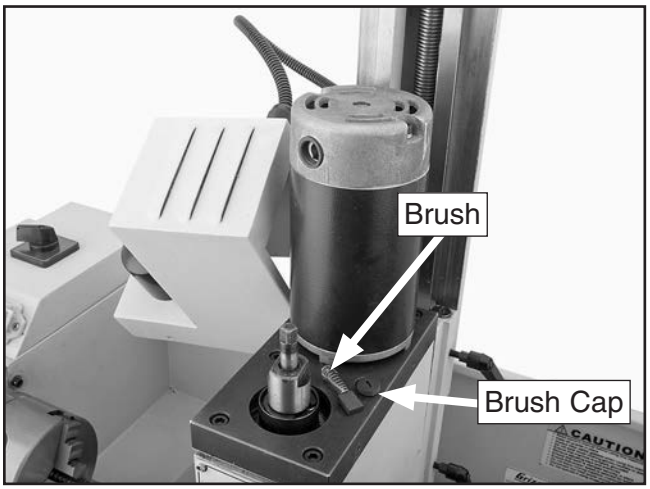


Figure 153. Front motor brush components removed.

4. Install new brush and re-install brush cap.

5. Repeat **Steps 3–4** to replace rear motor brush.

6. Replace mill motor cover and drawbar cap.

SECTION 9: WIRING

These pages are current at the time of printing. However, in the spirit of improvement, we may make changes to the electrical systems of future machines. Compare the manufacture date of your machine to the one stated in this manual, and study this section carefully.

If there are differences between your machine and what is shown in this section, call Technical Support at (570) 546-9663 for assistance BEFORE making any changes to the wiring on your machine. An updated wiring diagram may be available. **Note:** *Please gather the serial number and manufacture date of your machine before calling. This information can be found on the main machine label.*

⚠WARNING
Wiring Safety Instructions

SHOCK HAZARD. Working on wiring that is connected to a power source is extremely dangerous. Touching electrified parts will result in personal injury including but not limited to severe burns, electrocution, or death. Disconnect the power from the machine before servicing electrical components!

MODIFICATIONS. Modifying the wiring beyond what is shown in the diagram may lead to unpredictable results, including serious injury or fire. This includes the installation of unapproved aftermarket parts.

WIRE CONNECTIONS. All connections must be tight to prevent wires from loosening during machine operation. Double-check all wires disconnected or connected during any wiring task to ensure tight connections.

CIRCUIT REQUIREMENTS. You MUST follow the requirements at the beginning of this manual when connecting your machine to a power source.

WIRE/COMPONENT DAMAGE. Damaged wires or components increase the risk of serious personal injury, fire, or machine damage. If you notice that any wires or components are damaged while performing a wiring task, replace those wires or components.

MOTOR WIRING. The motor wiring shown in these diagrams is current at the time of printing but may not match your machine. If you find this to be the case, use the wiring diagram inside the motor junction box.

CAPACITORS/INVERTERS. Some capacitors and power inverters store an electrical charge for up to 10 minutes after being disconnected from the power source. To reduce the risk of being shocked, wait at least this long before working on capacitors.

EXPERIENCING DIFFICULTIES. If you are experiencing difficulties understanding the information included in this section, contact our Technical Support at (570) 546-9663.

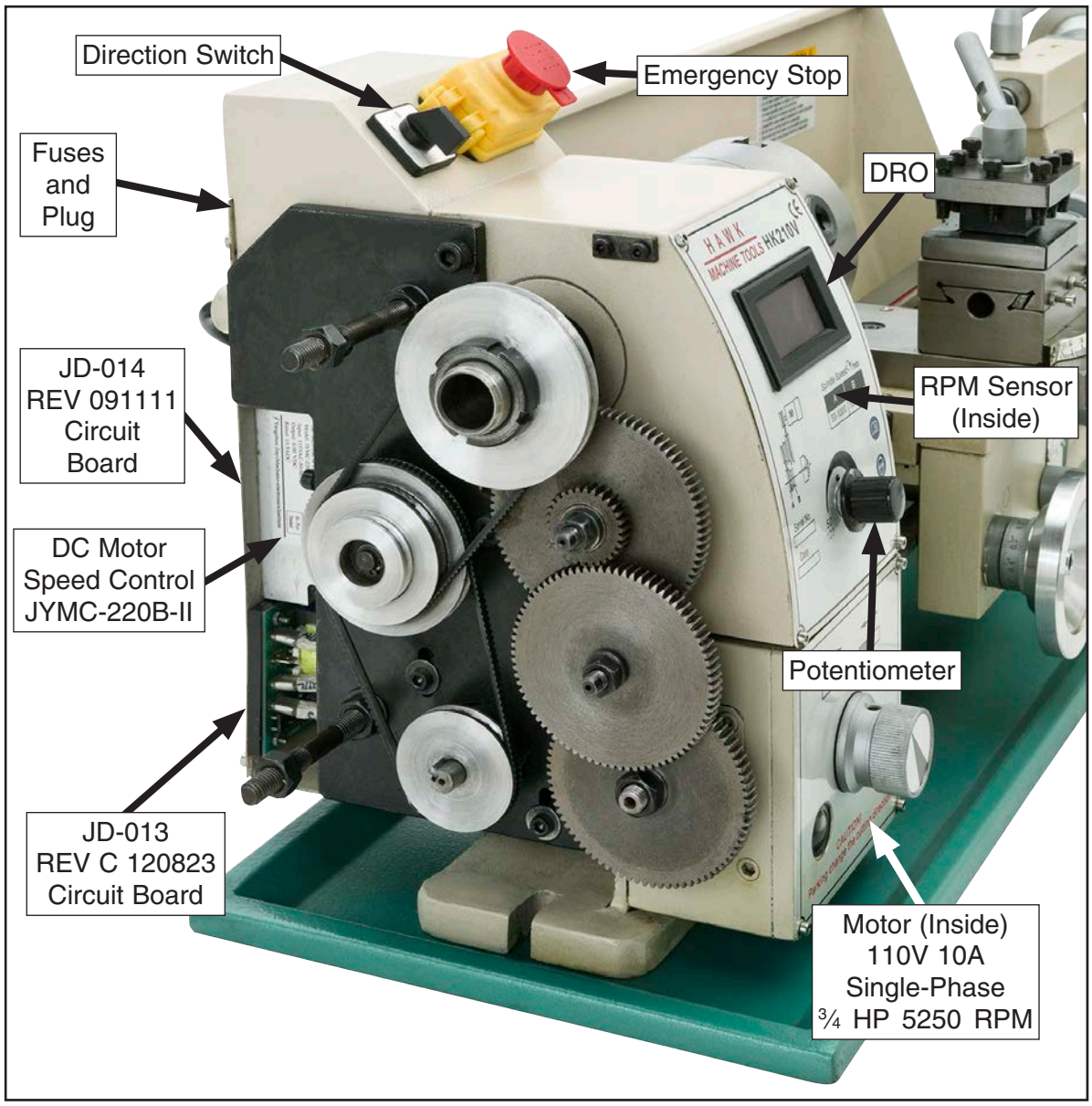
NOTICE

The photos and diagrams included in this section are best viewed in color. You can view these pages in color at www.grizzly.com.

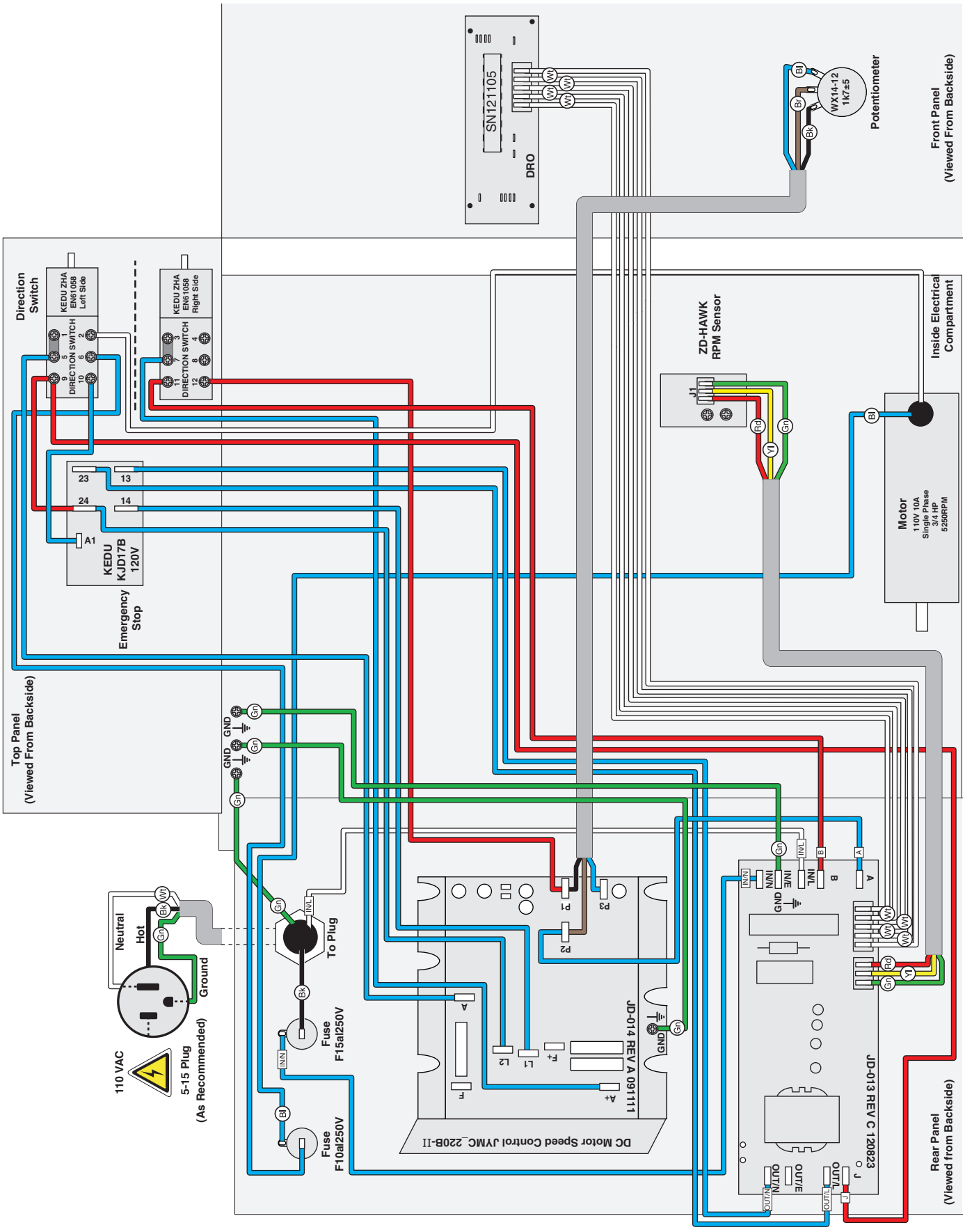
COLOR KEY

BLACK	Bk	BLUE	Bl	YELLOW	Yl	LIGHT BLUE	Lb
WHITE	Wt	BROWN	Br	YELLOW GREEN	Yg	BLUE WHITE	Bw
GREEN	Gn	GRAY	Gy	PURPLE	Pu	TURQUOISE	Tu
RED	Rd	ORANGE	Or	PINK	Pk		

G0768 Wiring Overview



G0768 Wiring



G0768 Wiring Photos

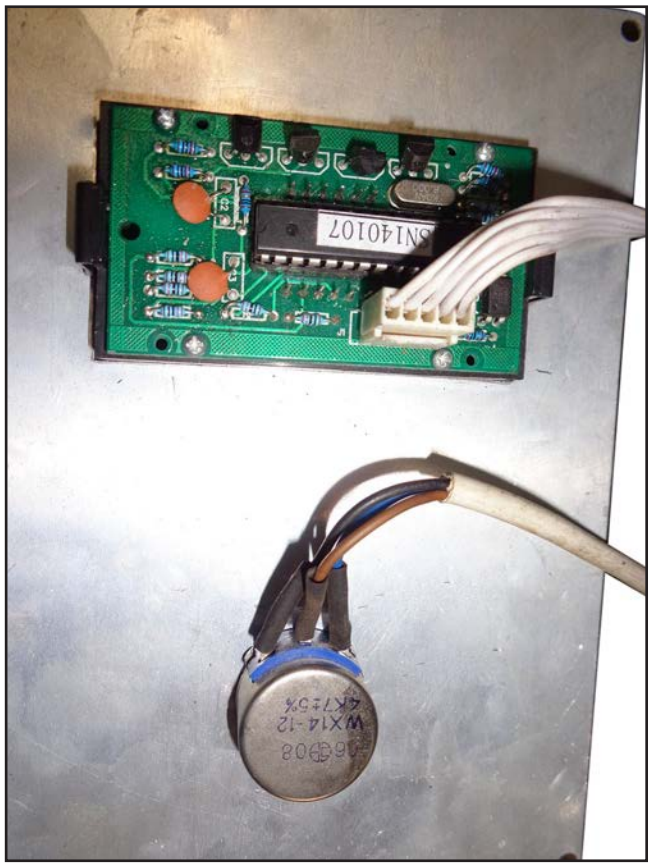


Figure 154. Front panel.

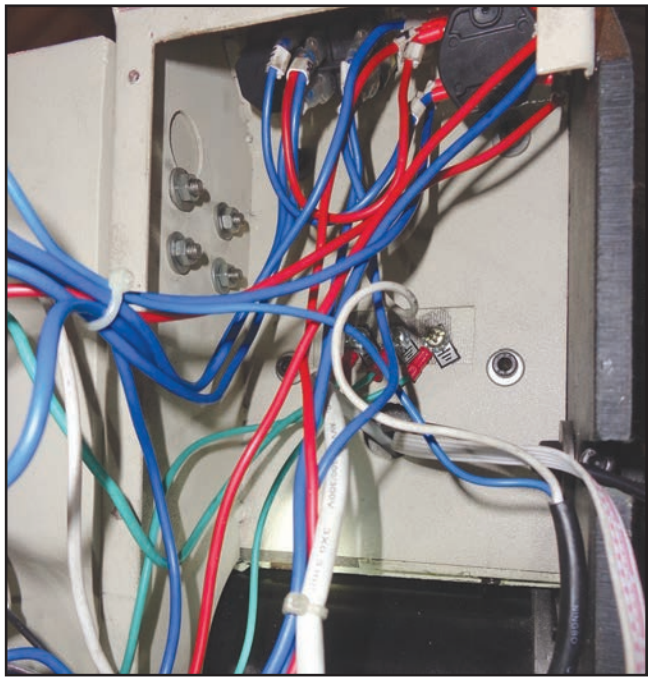


Figure 155. Top panel.

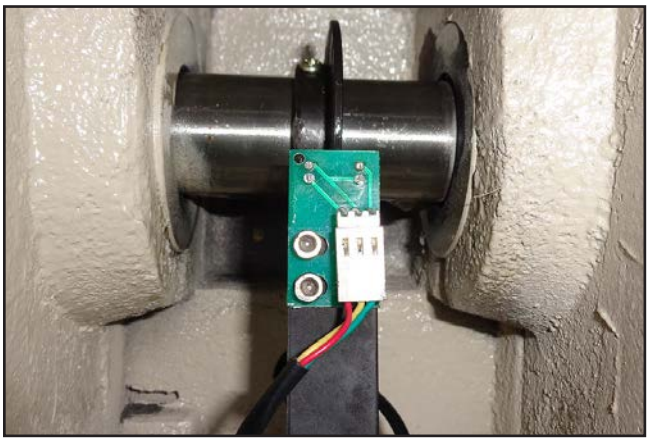
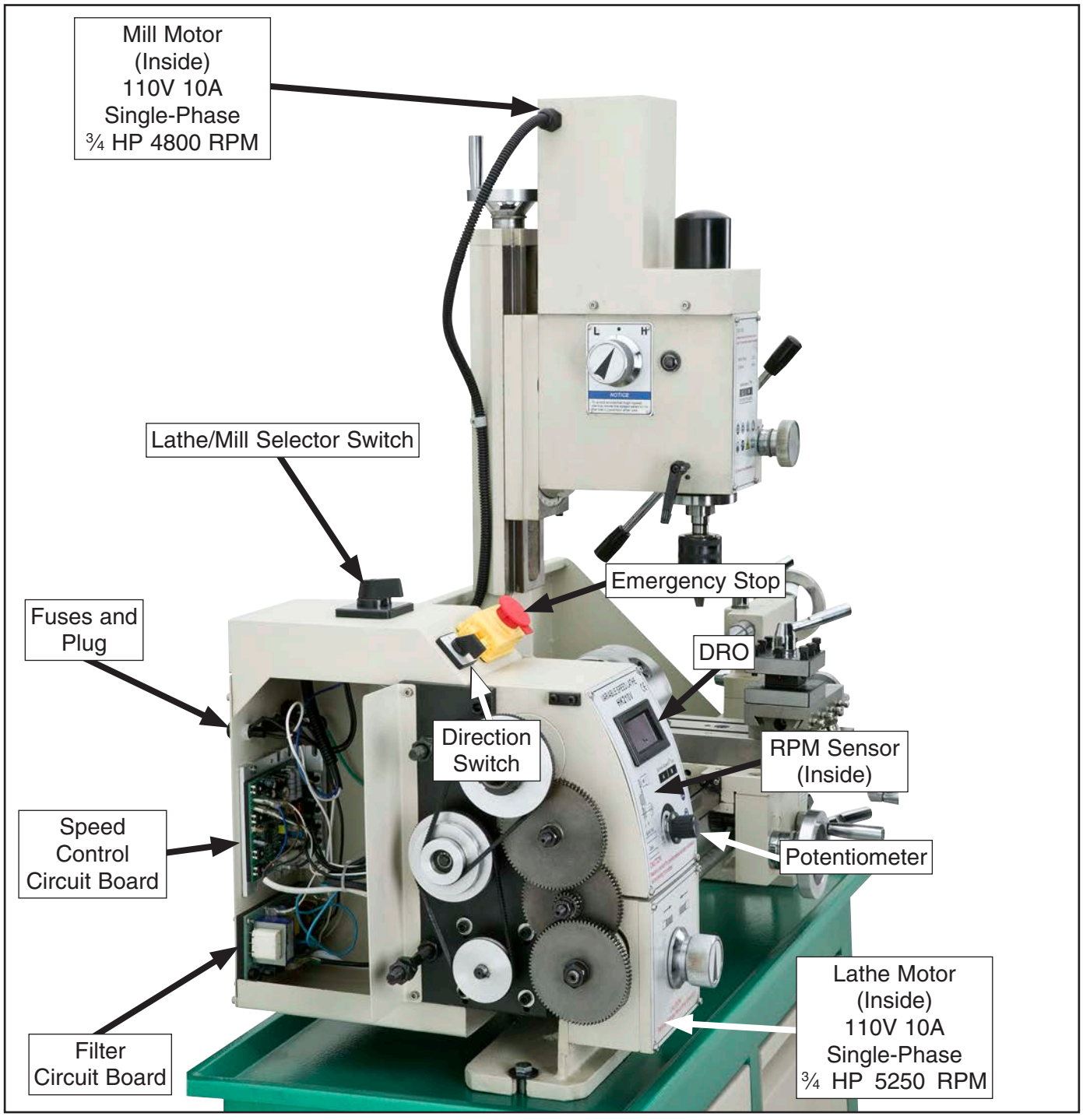


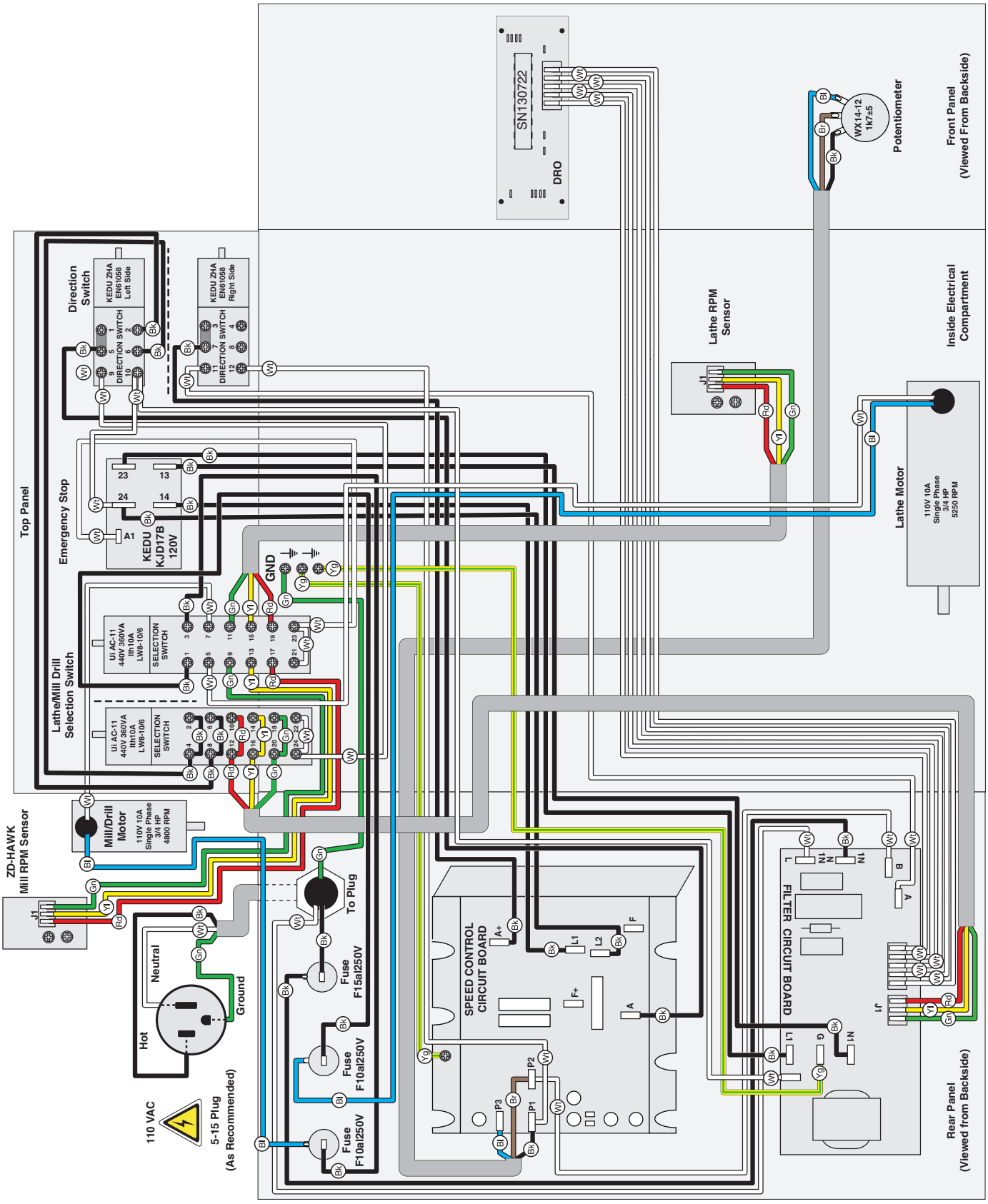
Figure 156. RPM sensor.

Figure 157. Back panel.

G0769 Wiring Overview



G0769 Wiring



G0769 Wiring Photos

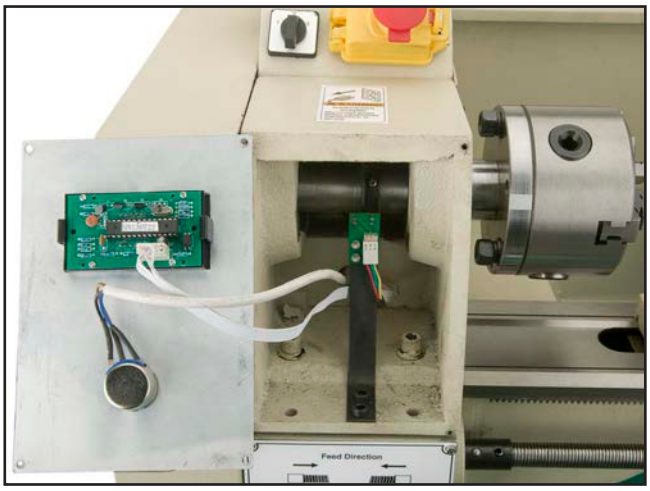


Figure 158. Front panel.

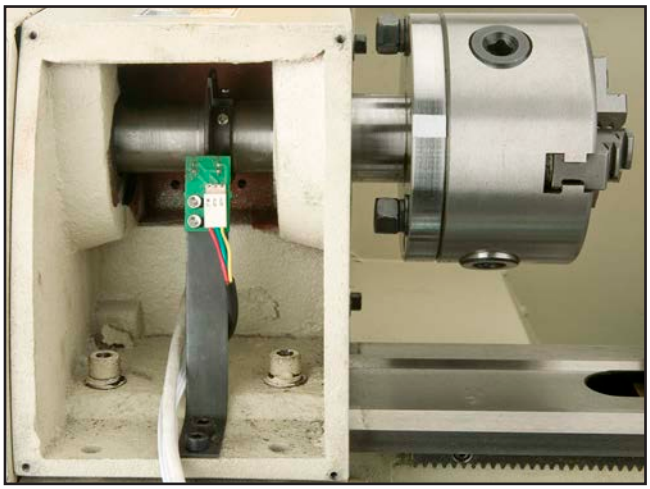


Figure 161. RPM sensor.

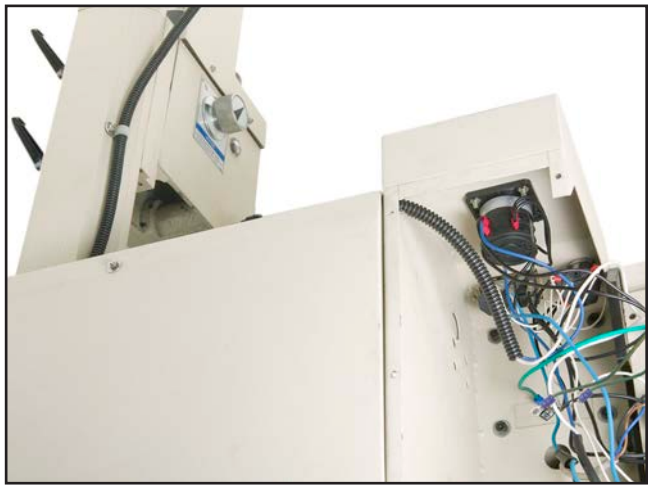


Figure 159. Top panel components.

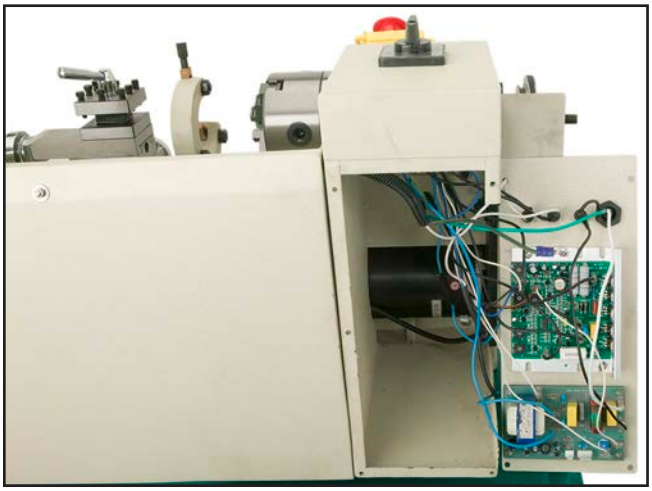
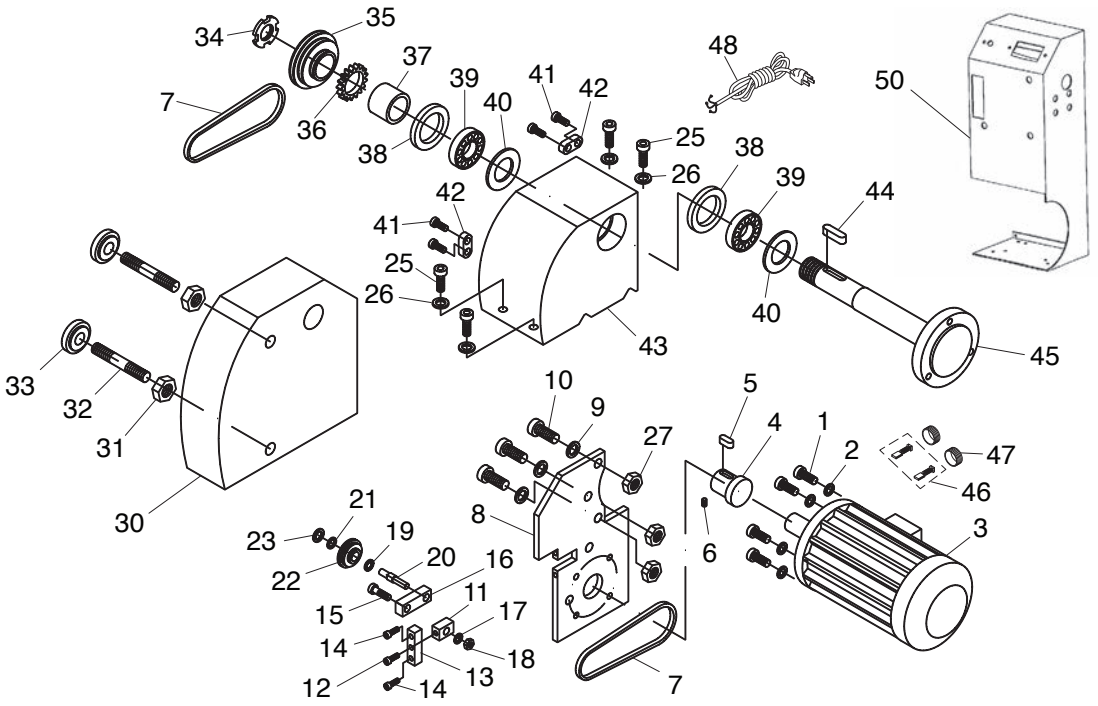


Figure 162. Back panel.

Figure 160. Mill/drill motor.

SECTION 10: PARTS

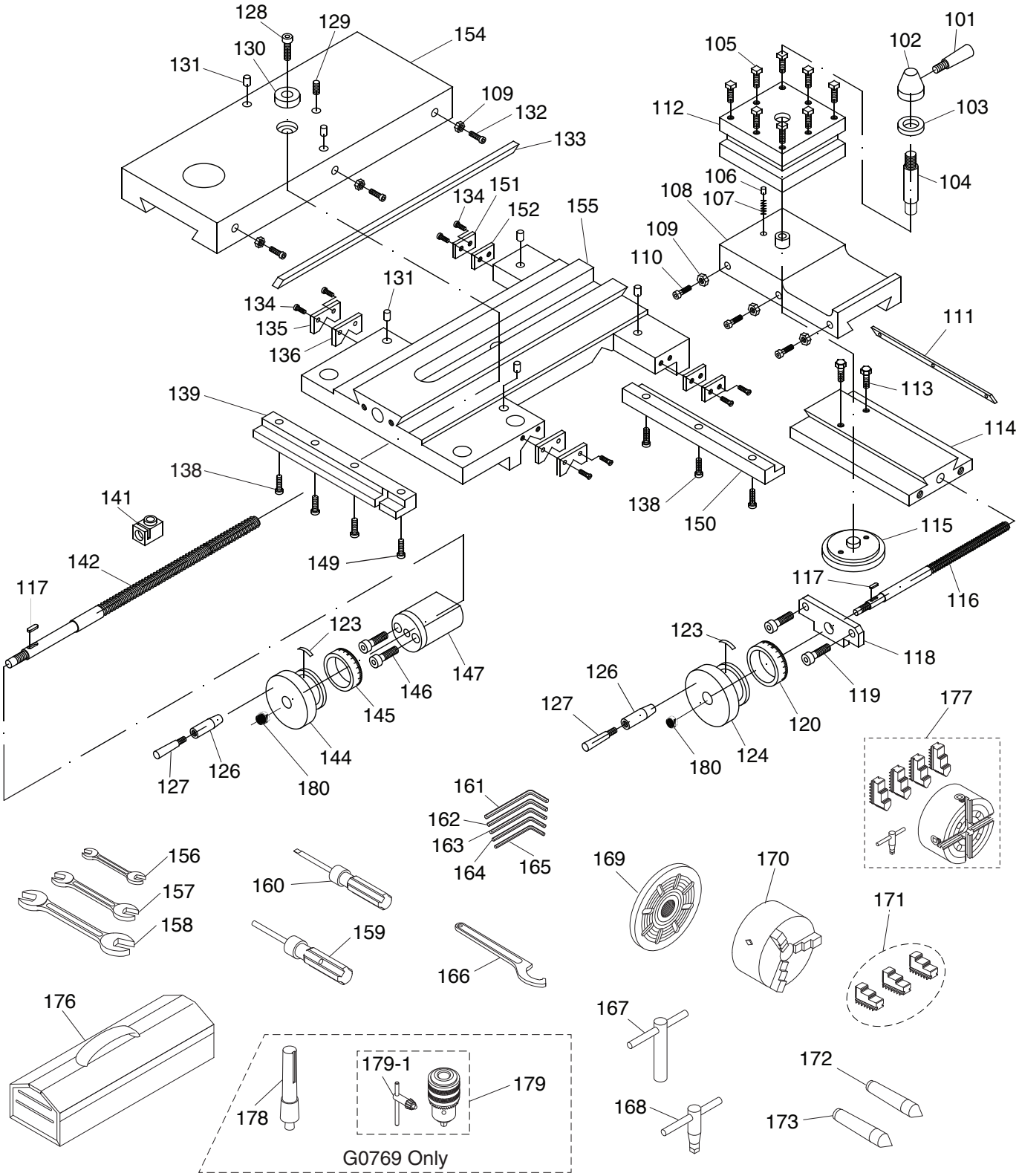
Headstock



REF	PART #	DESCRIPTION
1	P0768001	CAP SCREW M5-.8 X 25
2	P0768002	FLAT WASHER 5MM
3	P0768003	MOTOR 600W 110VDC (G0768)
3	P0769003	MOTOR 600W 110VDC (G0769)
4	P0768004	MOTOR PULLEY
5	P0768005	KEY 4 X 4 X 20
6	P0768006	SET SCREW M6-1 X 8
7	P0768007	V-BELT 5M375 GATES POLYFLEX (G0768)
7	P0769007	V-BELT 5M387 GATES POLYFLEX (G0769)
8	P0768008	MOTOR MOUNT (G0768)
8	P0769008	MOTOR MOUNT (G0769)
9	P0768009	FLAT WASHER 8MM
10	P0768010	CAP SCREW M8-1.25 X 20
11	P0768011	MOUNT BLOCK
12	P0768012	CAP SCREW M6-1 X 30
13	P0768013	TENSION ADJUSTMENT BLOCK
14	P0768014	CAP SCREW M6-1 X 20
15	P0768015	PIVOT BLOCK BOLT M8-1.25 X 35
16	P0768016	IDLER PIVOT BLOCK
17	P0768017	FLAT WASHER 8MM
18	P0768018	HEX NUT M8-1.25
19	P0768019	INT RETAINING RING 8MM
20	P0768020	IDLER SHAFT
21	P0768021	BALL BEARING 608ZZ
22	P0768022	IDLER PULLEY
23	P0768023	INT RETAINING RING 22MM

REF	PART #	DESCRIPTION
25	P0768025	CAP SCREW M8-1.25 X 25
26	P0768026	FLAT WASHER 8MM
27	P0768027	HEX NUT M8-1.25
30	P0768030	END GEAR COVER (G0768)
30	P0769030	END GEAR COVER (G0769)
31	P0768031	HEX NUT M10-1.5
32	P0768032	STUD-DE M10-1.5 X 90, 35
33	P0768033	KNURLED KNOB M10-1.5
34	P0768034	SPANNER NUT M27 X 1
35	P0768035	SPINDLE PULLEY
36	P0768036	GEAR 40T
37	P0768037	SPACER
38	P0768038	CASTING SEAL
39	P0768039	TAPERED ROLLER BEARING 30206
40	P0768040	GREASE SEAL
41	P0768041	CAP SCREW M4-.7 X 10
42	P0768042	BLOCK, ROUND ENDS
43	P0768043	HEADSTOCK CASTING
44	P0768044	KEY 3 X 3 X 15
45	P0768045	SPINDLE W/INTRINSIC BACK PLATE
46	P0768046	MOTOR CARBON BRUSH 2-PC SET
47	P0768047	MOTOR CARBON BRUSH CAP
48	P0768048	POWER CORD 16G 3W 72" 5-15
50	P0768050	ELECTRICAL SHROUD (G0768)
50	P0769050	ELECTRICAL SHROUD (G0769)

Carriage Components & Accessories



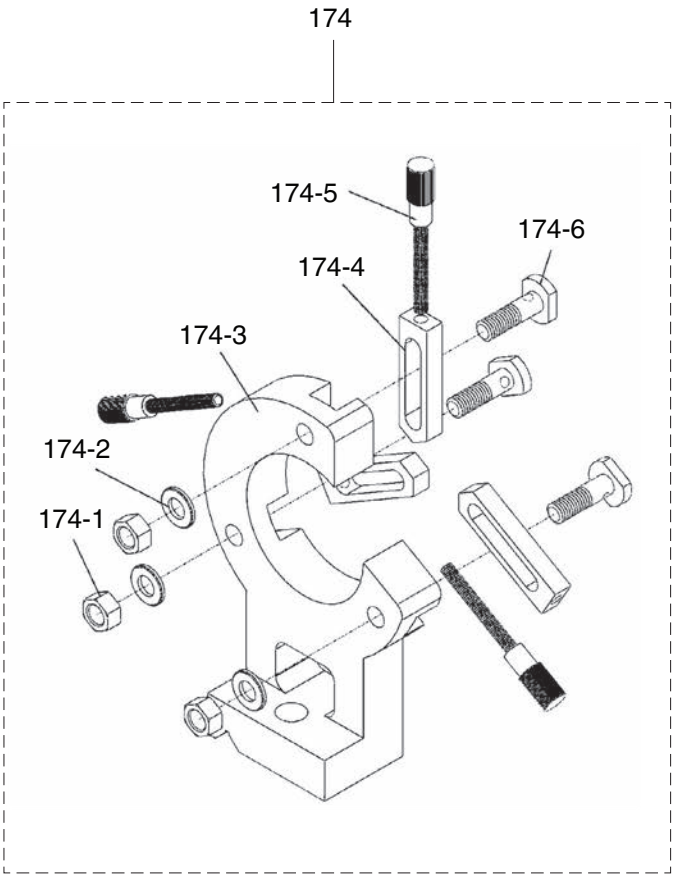
Carriage Components & Accessories

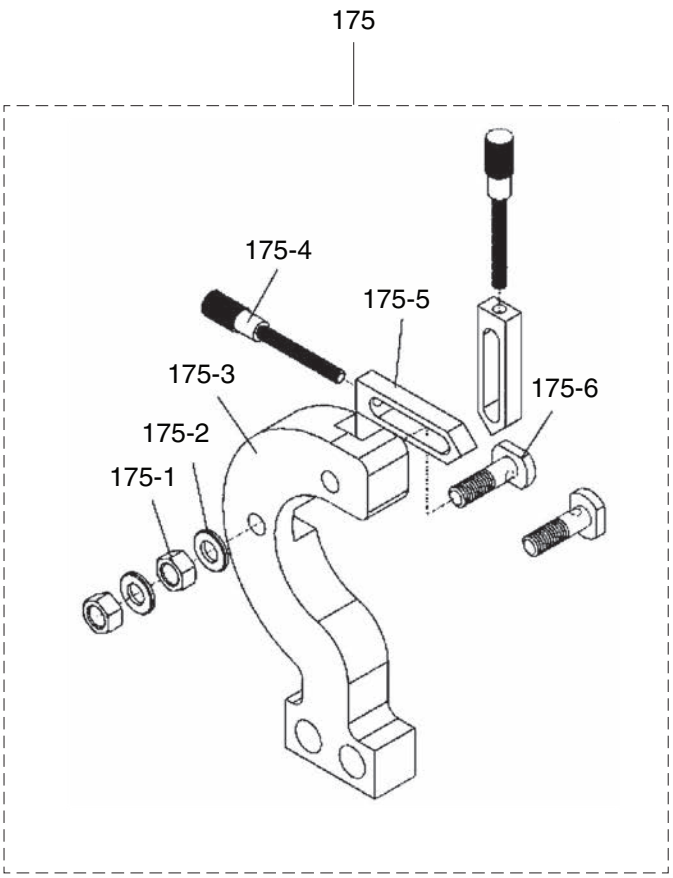
REF	PART #	DESCRIPTION
101	P0768101	TOOL POST HANDLE M5-.8 X 5
102	P0768102	TOOL POST HUB
103	P0768103	TOOL POST FLAT WASHER 5MM, PLASTIC
104	P0768104	STUD-DE M8-1.25 X 68, 18
105	P0768105	TOOL HOLDER BOLT M6-1 X 25
106	P0768106	INDENT PIN
107	P0768107	COMPRESSION SPRING
108	P0768108	COMPOUND REST
109	P0768109	HEX NUT M4-.7
110	P0768110	CAP SCREW M4-.7 X 14
111	P0768111	COMPOUND REST GIB
112	P0768112	TOOL POST BODY
113	P0768113	HEX BOLT M5-.8 X 30
114	P0768114	COMPOUND REST (G0768)
114	P0769114	COMPOUND REST (G0769)
115	P0768115	COMPOUND REST SWIVEL BASE
116	P0768116	COMPOUND REST LEADSCREW
117	P0768117	KEY 3 X 3 X 12
118	P0768118	COMPOUND REST LEADSCREW BRACKET
119	P0768119	CAP SCREW M5-.8 X 12
120	P0768120	COMPOUND REST GRADUATED DIAL
123	P0768123	CURVED PLATE
124	P0768124	COMPOUND REST HANDWHEEL
126	P0768126	HANDWHEEL HANDLE
127	P0768127	SHOULDER SCREW E116, 53
128	P0768128	CAP SCREW M4-.7 X 8
129	P0768129	SET SCREW M5-.8 X 10
130	P0768130	BUSHING
131	P0768131	BALL OILER 5MM PRESS-IN
132	P0768132	CAP SCREW M4-.7 X 20
133	P0768133	CROSS SLIDE GIB
134	P0768134	PHLP HD SCR M3-.5 X 10
135	P0768135	V-WAY WIPER COVER
136	P0768136	V-WAY WIPER
138	P0768138	CAP SCREW M5-.8 X 10
139	P0768139	SADDLE CLAMP SLIDE (FR)
141	P0768141	CROSS SLIDE LEADSCREW NUT

REF	PART #	DESCRIPTION
142	P0768142	CROSS SLIDE LEADSCREW
144	P0768144	CROSS SLIDE HANDWHEEL
145	P0768145	CROSS SLIDE GRADUATED DIAL
146	P0768146	CAP SCREW M6-1 X 50
147	P0768147	CROSS SLIDE LEADSCREW BRACKET
149	P0768149	CAP SCREW M8-1.25 X 30
150	P0768150	SADDLE CLAMP SLIDE (RR)
151	P0768151	STRAIGHT WAY WIPER
152	P0768152	STRAIGHT WAY WIPER COVER
154	P0768154	CROSS SLIDE (G0768)
154	P0769145	CROSS SLIDE (G0769)
155	P0768155	SADDLE
156	P0768156	WRENCH 6 X 7MM OPEN-ENDS
157	P0768157	WRENCH 8 X 10MM OPEN-ENDS
158	P0768158	WRENCH 14 X 16MM OPEN-ENDS
159	P0768159	SCREWDRIVER PHILLIPS #2
160	P0768160	SCREWDRIVER FLAT #2
161	P0768161	HEX WRENCH 8MM
162	P0768162	HEX WRENCH 6MM
163	P0768163	HEX WRENCH 5MM
164	P0768164	HEX WRENCH 4MM
165	P0768165	HEX WRENCH 3MM
166	P0768166	SPANNER WRENCH
167	P0768167	TOOL POST WRENCH 8MM SQUARE
168	P0768168	LATHE CHUCK KEY 8MM STD
169	P0768169	FACEPLATE 6-3/4"
170	P0768170	3-JAW CHUCK 4"
171	P0768171	3-JAW CHUCK EXTERNAL JAW SET
172	P0768172	DEAD CENTER MT#3
173	P0768173	DEAD CENTER MT#2
176	P0768176	TOOLBOX
177	P0768177	4-JAW CHUCK 4" W/KEY
178	P0769178	DRILL CHUCK ARBOR MT#2 X B16 (G0769)
179	P0769179	DRILL CHUCK B16 1-13MM W/KEY (G0769)
179-1	P0769179-1	DRILL CHUCK KEY 8MM STD 11 SD-16MM (G0769)
180	P0768180	LOCK NUT M8-1.25

Please Note: *We do our best to stock replacement parts whenever possible, but we cannot guarantee that all parts shown here are available for purchase. Call* ***(800) 523-4777*** *or visit our online parts store at* ***www.grizzly.com*** *to check for availability.*

Steady & Follow Rest

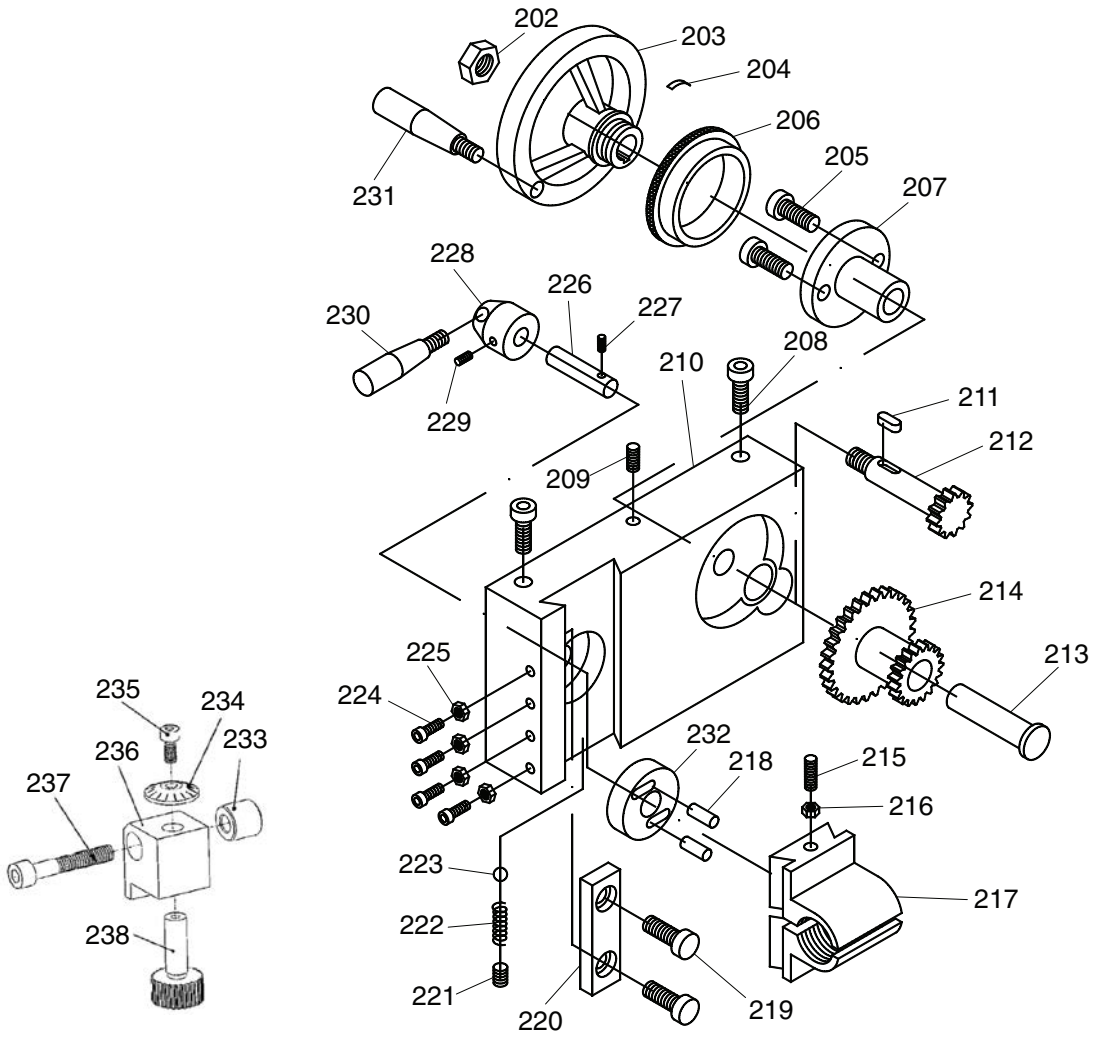




REF	PART #	DESCRIPTION
174	P0768174	STEADY REST ASSEMBLY
174-1	P0768174-1	HEX NUT M8-1.25
174-2	P0768174-2	LOCK WASHER 8MM
174-3	P0768174-3	STEADY REST
174-4	P0768174-4	STEADY REST FINGER
174-5	P0768174-5	ADJUSTING SCREW
174-6	P0768174-6	T-BOLT M8-1.25 X 26

REF	PART #	DESCRIPTION
175	P0768175	FOLLOW REST ASSEMBLY
175-1	P0768175-1	HEX NUT M8-1.25
175-2	P0768175-2	LOCK WASHER 8MM
175-3	P0768175-3	FOLLOW REST
175-4	P0768175-4	ADJUSTING SCREW
175-5	P0768175-5	FOLLOW REST FINGER
175-6	P0768175-6	T-BOLT M8-1.25 X 26

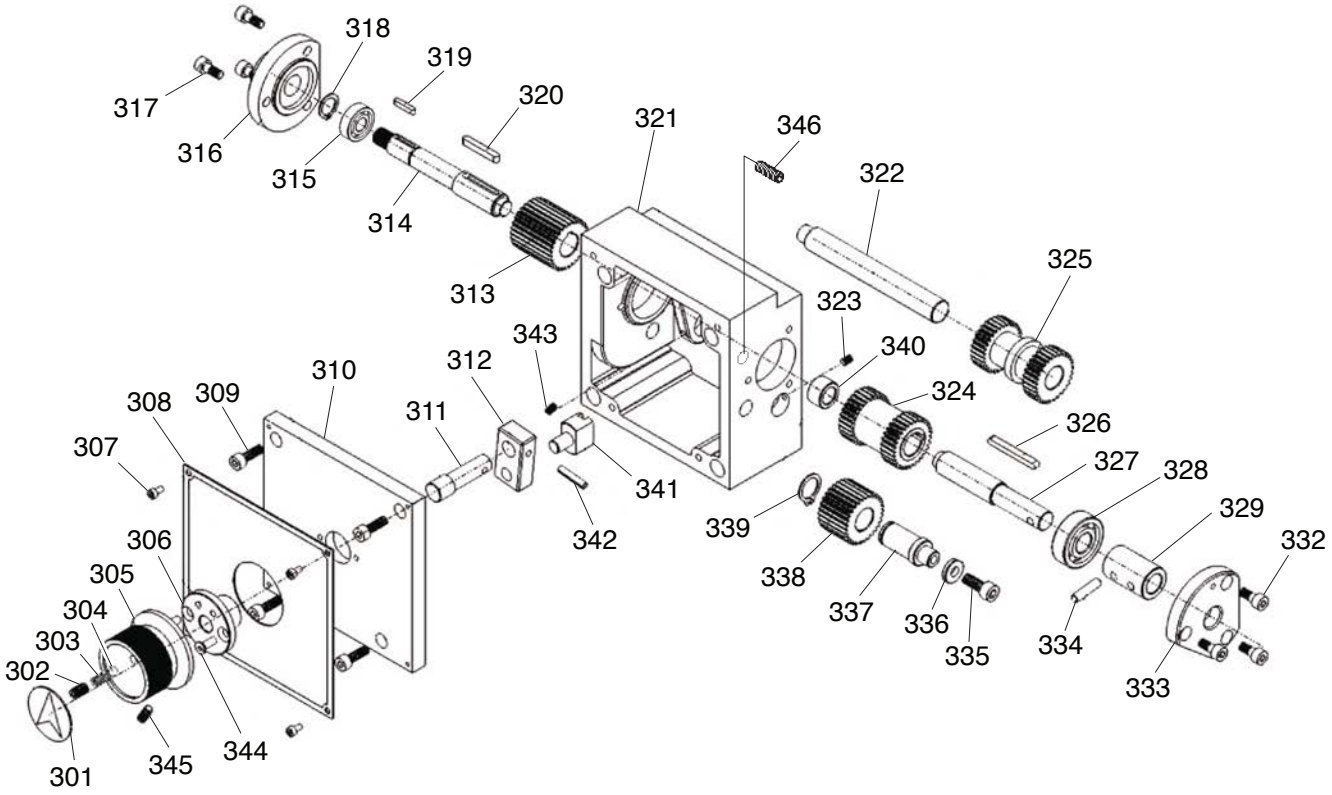
Apron



REF	PART #	DESCRIPTION
202	P0768202	LOCK NUT M8-1.25
203	P0768203	CARRIAGE HANDWHEEL (G0768)
203	P0769203	CARRIAGE HANDWHEEL (G0769)
204	P0768204	CURVED PLATE
205	P0768205	CAP SCREW M5-.8 X 10
206	P0768206	CARRIAGE GRADUATED DIAL
207	P0768207	HANDWHEEL BRACKET
208	P0768208	CAP SCREW M8-1.25 X 25
209	P0768209	SET SCREW M5-.8 X 8
210	P0768210	APRON
211	P0768211	KEY 3 X 3 X 8
212	P0768212	GEAR SHAFT 14T
213	P0768213	SHAFT
214	P0768214	COMBO GEAR 44/21T
215	P0768215	SET SCREW M4-.7 X 35
216	P0768216	HEX NUT M4-.7
217	P0768217	HALF NUT 2-PC SET
218	P0768218	DOWEL PIN 4 X 10
219	P0768219	CAP SCREW M4-.7 X 10

REF	PART #	DESCRIPTION
220	P0768220	SUPPORT BAR
221	P0768221	SET SCREW M6-1 X 8
222	P0768222	COMPRESSION SPRING 0.6 X 3.5 X 12
223	P0768223	STEEL BALL 4.5MM
224	P0768224	CAP SCREW M4-.7 X 12
225	P0768225	HEX NUT M4-.7
226	P0768226	HALF NUT SHAFT
227	P0768227	ROLL PIN 3 X 30
228	P0768228	HALF NUT LEVER HUB
229	P0768229	SET SCREW M5-.8 X 6
230	P0768230	HALF NUT LEVER M5-.8 X 5
231	P0768231	HANDWHEEL HANDLE M5-.8 X 8
232	P0768232	HALF NUT MOUNT
233	P0768233	THREAD DIAL BUSHING
234	P0768234	THREAD DIAL INDICATOR
235	P0768235	CAP SCREW M4-.7 X 10
236	P0768236	THREAD DIAL BODY
237	P0768237	CAP SCREW M6-1 X 35
238	P0768238	COMBO GEAR 32T

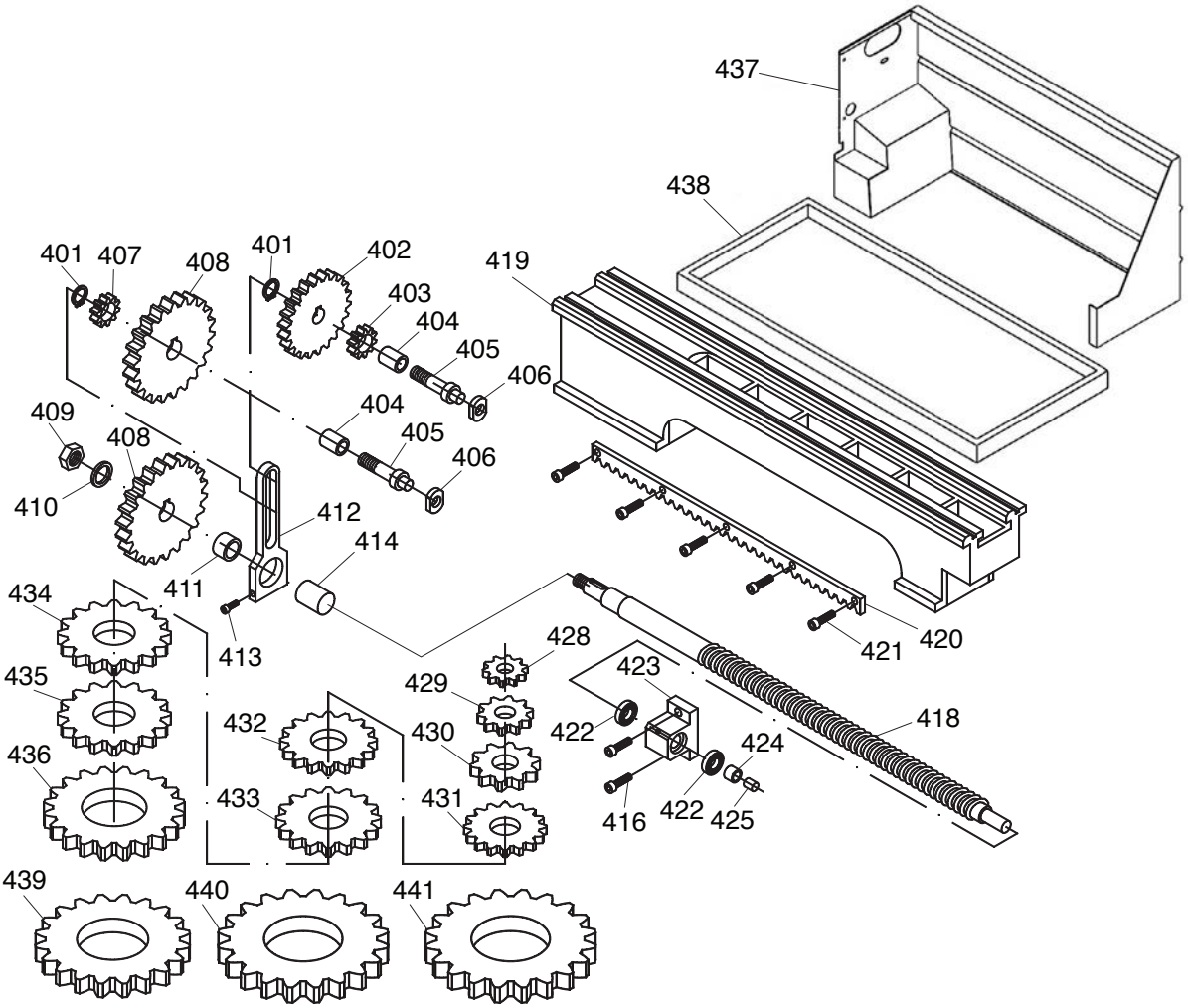
Gearbox



REF	PART #	DESCRIPTION
301	P0768301	DIRECTION INDICATOR PLATE
302	P0768302	SET SCREW M6-1 X 10
303	P0768303	COMPRESSION SPRING 0.8 X 4 X 16
304	P0768304	STEEL BALL 5MM
305	P0768305	DIRECTION KNOB
306	P0768306	SHAFT BRACKET
307	P0768307	CAP SCREW M3-.5 X 6
308	P0768308	GEARBOX FRONT PANEL (G0768)
308	P0769308	GEARBOX FRONT PANEL (G0769)
309	P0768309	CAP SCREW M5-.8 X 16
310	P0768310	GEARBOX FRONT COVER (G0768)
310	P0769310	GEARBOX FRONT COVER (G0769)
311	P0768311	SHAFT
312	P0768312	ROCKER ARM
313	P0768313	GEAR 30T
314	P0768314	SHAFT (G0768)
314	P0769314	SHAFT (G0769)
315	P0768315	BALL BEARING 6201-2RZ
316	P0768316	BEARING FLANGE
317	P0768317	CAP SCREW M5-.8 X 12
318	P0768318	EXT RETAINING RING 12MM
319	P0768319	KEY 3 X 3 X 6
320	P0768320	KEY 4 X 4 X 28
321	P0768321	GEARBOX CASTING (G0768)
321	P0769321	GEARBOX CASTING (G0769)

REF	PART #	DESCRIPTION
322	P0768322	SHAFT (G0768)
322	G0769322	SHAFT (G0769)
323	P0768323	SET SCREW M4-.7 X 8
324	P0768324	COMBO GEAR 30/30T
325	P0768325	COMBO GEAR 30/30T W/FLANGE
326	P0768326	KEY 4 X 4 X 40
327	P0768327	SHAFT (G0768)
327	P0769327	SHAFT (G0769)
328	P0768328	BALL BEARING 6201-2RZ
329	P0768329	COUPLER
332	P0768332	CAP SCREW M5-.8 X 12
333	P0768333	BEARING FLANGE
334	P0768334	ROLL PIN 5 X 22
335	P0768335	CAP SCREW M6-1 X 16
336	P0768336	FLAT WASHER 6MM
337	P0768337	SHAFT
338	P0768338	GEAR 30T
339	P0768339	EXT RETAINING RING 14MM
340	P0768340	BUSHING
341	P0768341	SHIFTING FORK
342	P0768342	ROLL PIN 4 X 20
343	P0768343	SET SCREW M5-.8 X 12
344	P0768344	FLAT HD CAP SCR M4-.7 X 12
345	P0768345	SET SCREW M4-.7 X 6
346	P0768346	SET SCREW M8-1.25 X 8

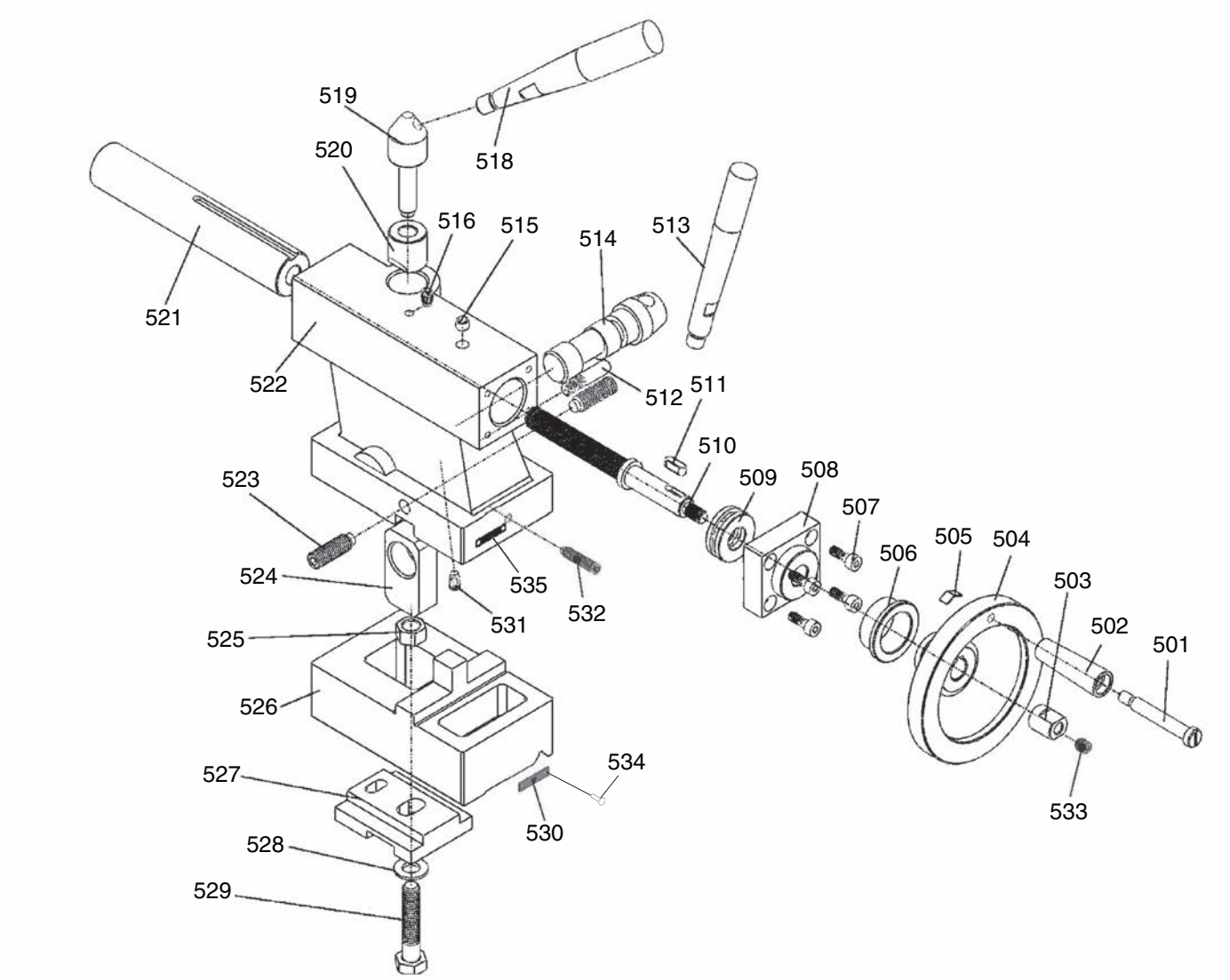
Bed & End Gears



REF	PART #	DESCRIPTION
401	P0768401	EXT RETAINING RING 8MM
402	P0768402	GEAR 84T
403	P0768403	GEAR 30T
404	P0768404	BUSHING
405	P0768405	THREADED SHAFT
406	P0768406	SHAFT RETAINER M8-1.25
407	P0768407	GEAR 20T
408	P0768408	GEAR 80T
409	P0768409	HEX NUT M10-1.5
410	P0768410	FLAT WASHER 10MM
411	P0768411	BUSHING
412	P0768412	PIVOT ARM
413	P0768413	CAP SCREW M6-1 X 35
414	P0768414	BUSHING
416	P0768416	CAP SCREW M6-1 X 14
418	P0768418	LONGITUDINAL LEADSCREW (G0768)
418	P0769418	LONGITUDINAL LEADSCREW (G0769)
419	P0768419	BED (G0768)
419	P0769419	BED (G0769)
420	P0768420	RACK
421	P0768421	CAP SCREW M2-.4 X 12

REF	PART #	DESCRIPTION
422	P0768422	THRUST BEARING 51100
423	P0768423	LEADSCREW BRACKET (RH)
424	P0768424	COUPLING NUT M8-1.25 X 20
425	P0768425	SET SCREW M4-.7 X 12
428	P0768428	GEAR 33T
429	P0768429	GEAR 40T
430	P0768430	GEAR 50T
431	P0768431	GEAR 53T
432	P0768432	GEAR 55T
433	P0768433	GEAR 57T
434	P0768434	GEAR 60T
435	P0768435	GEAR 63T
436	P0768436	GEAR 65T
437	P0768437	BACK SPLASH (G0768)
437	P0769437	BACK SPLASH (G0769)
438	P0768438	CHIP PAN (G0768)
438	P0769438	CHIP PAN (G0769)
439	P0768439	GEAR 70T
440	P0768440	GEAR 71T
441	P0768441	GEAR 72T

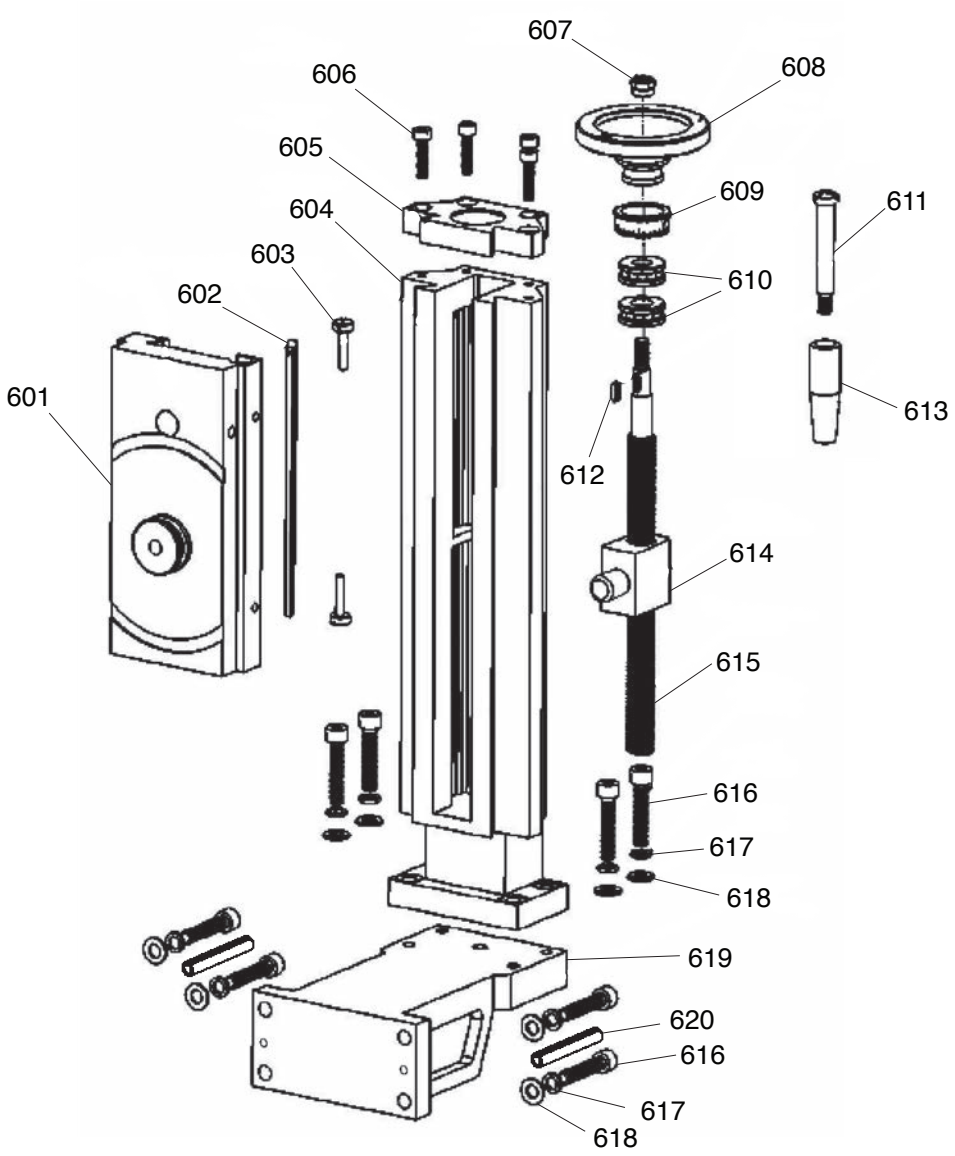
Tailstock



REF	PART #	DESCRIPTION
501	P0768501	SHOULDER SCREW M5-.8 X 6
502	P0768502	HANDWHEEL HANDLE
503	P0768503	COUPLING NUT M6-1
504	P0768504	QUILL HANDWHEEL (G0768)
504	P0769504	QUILL HANDWHEEL (G0769)
505	P0768505	CURVED PLATE
506	P0768506	QUILL GRADUATED DIAL
507	P0768507	CAP SCREW M4-.7 X 12
508	P0768508	BEARING FLANGE
509	P0768509	THRUST BEARING 51100
510	P0768510	QUILL LEADSCREW
511	P0768511	KEY 4 X 4 X 12
512	P0768512	STUD-SE M6-1 X 30, 10
513	P0768513	TAILSTOCK LOCK LEVER M8-1.25
514	P0768514	ECCENTRIC SHAFT
515	P0768515	BALL OILER 6MM PRESS-IN
516	P0768516	SET SCREW M5-.8 X 8
518	P0768518	QUILL LOCK LEVER M6-1 X 5

REF	PART #	DESCRIPTION
519	P0768519	QUILL LOCK HUB
520	P0768520	QUILL LOCK PLUNGER
521	P0768521	QUILL
522	P0768522	TAILSTOCK CASTING
523	P0768523	SET SCREW M8-1.25 X 25
524	P0768524	LOCK BLOCK
525	P0768525	HEX NUT M8-1.25
526	P0768526	TAILSTOCK BASE
527	P0768527	CLAMP PLATE
528	P0768528	FLAT WASHER 8MM
529	P0768529	HEX BOLT M8-1.25 X 40
530	P0768530	OFFSET PLATE, TOP
531	P0768531	SET SCREW M5-.8 X 8
532	P0768532	SET SCREW M8-1.25 X 25
533	P0768533	SET SCREW M6-1 X 6 CONE-PT
534	P0768534	RIVET 2 X 5
535	P0768534	OFFSET PLATE, BOTTOM

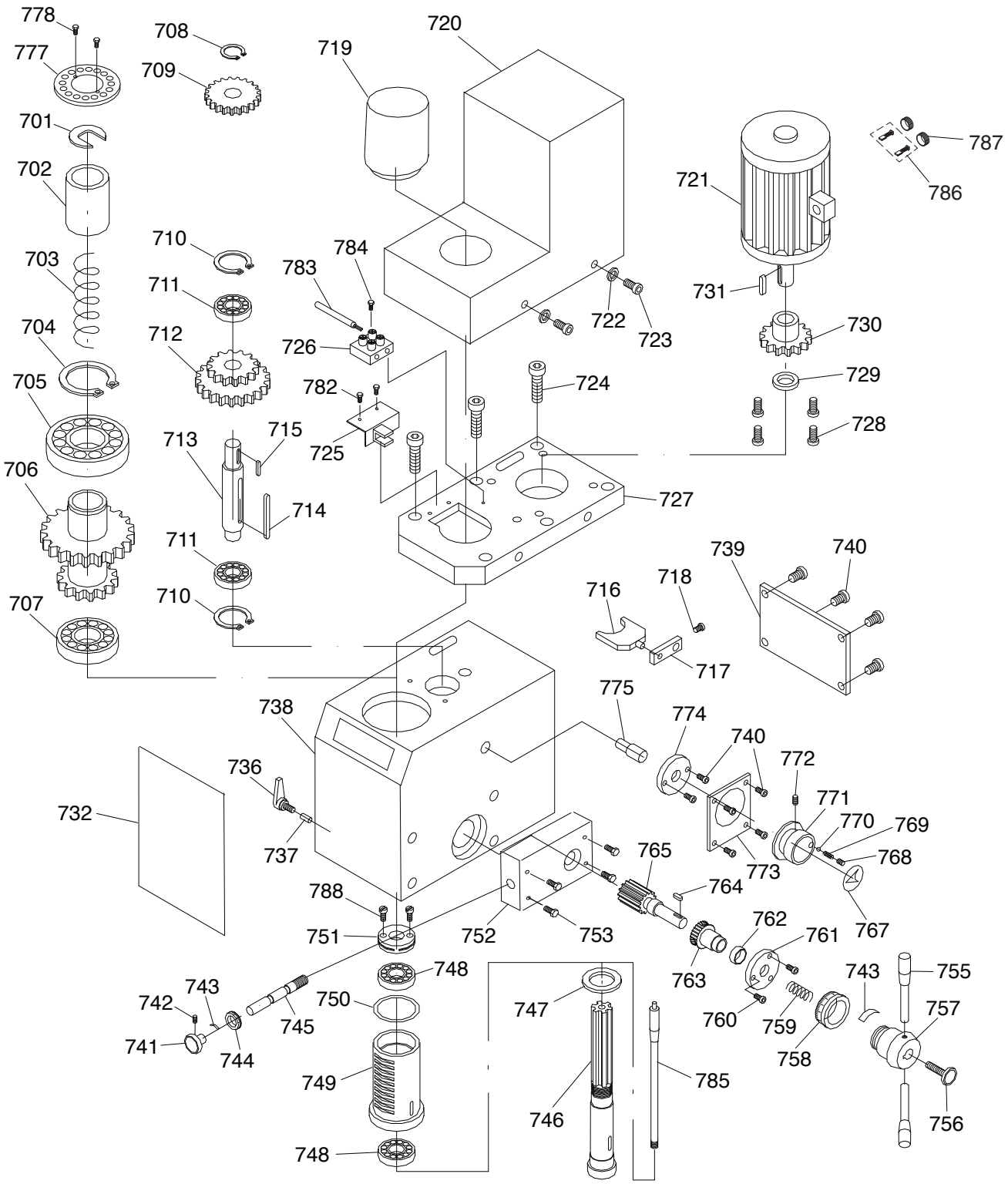
G0769 Mill Column



REF	PART #	DESCRIPTION
601	P0769601	MILL HEADSTOCK MOUNT
602	P0769602	Z-AXIS GIB
603	P0769603	GIB ADJUSTMENT SCREW
604	P0769604	COLUMN
605	P0769605	COLUMN TOP COVER
606	P0769606	CAP SCREW M6-1 X 25
607	P0769607	LOCK NUT M6-1
608	P0769608	Z-AXIS HANDWHEEL
609	P0769609	Z-AXIS GRADUATED DIAL
610	P0769610	THRUST BEARING 51201

REF	PART #	DESCRIPTION
611	P0769611	SHOULDER SCREW M5-.8 X 55, 10
612	P0769612	KEY 4 X 4 X 20
613	P0769613	HANDWHEEL HANDLE
614	P0769614	Z-AXIS LEADSCREW NUT
615	P0769615	Z-AXIS LEADSCREW
616	P0769616	CAP SCREW M8-1.25 X 40
617	P0769617	LOCK WASHER 8MM
618	P0769618	FLAT WASHER 8MM
619	P0769619	COLUMN BASE
620	P0769620	ROLL PIN 6 X 25

G0769 Mill Headstock

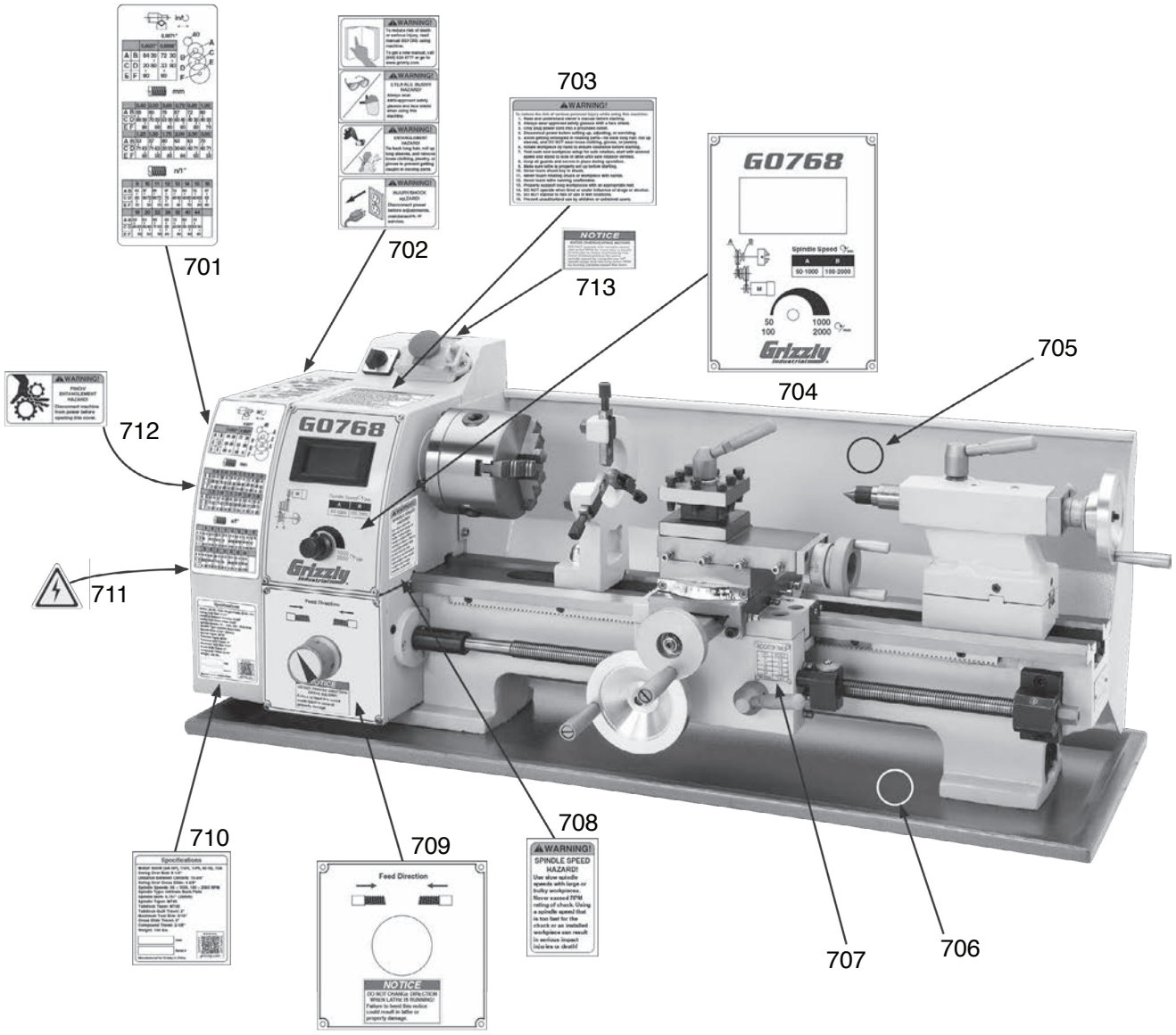


G0769 Mill Headstock

REF	PART #	DESCRIPTION
701	P0769701	ALIGNMENT WASHER
702	P0769702	BUSHING
703	P0769703	COMPRESSION SPRING 2.5 X 28 X 100
704	P0769704	EXT RETAINING RING 45MM
705	P0769705	BALL BEARING 6909ZZ
706	P0769706	COMBO GEAR 53T/65T
707	P0769707	ANGULAR CONTACT BEARING 6007RZ
708	P0769708	EXT RETAINING RING 15MM
709	P0769709	GEAR 37T
710	P0769710	EXT RETAINING RING 32MM
711	P0769711	BALL BEARING 6002ZZ
712	P0769712	COMBO GEAR 39T/51T
713	P0769713	SHAFT
714	P0769714	KEY 5 X 5 X 50
715	P0769715	KEY 5 X 5 X 12
716	P0769716	FORK
717	P0769717	FORK ARM
718	P0769718	CAP SCREW M8-1.25 X 8
719	P0769719	DRAWBAR COVER
720	P0769720	MOTOR COVER
721	P0769721	MILL MOTOR 600W 110V DC
722	P0769722	FLAT WASHER 4MM
723	P0769723	CAP SCREW M4-.7 X 8
724	P0769724	CAP SCREW M6-1 X 14
725	P0769725	L-BRACKET
726	P0769726	SPEED SENSOR
727	P0769727	MOTOR MOUNT
728	P0769728	CAP SCREW M5-.8 X 12
729	P0769729	SPACER 10MM
730	P0769730	GEAR 25T
731	P0769731	KEY 4 X 4 X 6
732	P0769732	HEADSTOCK FRONT PANEL
736	P0769736	ADJUSTABLE HANDLE M8-1.25 X 20
737	P0769737	LOCK PLUNGER, BRASS
738	P0769738	MILL HEADSTOCK CASTING
739	P0769739	HEADSTOCK REAR COVER
740	P0769740	CAP SCREW M4-.7 X 8
741	P0769741	FINE DOWNFEED KNOB
742	P0769742	SET SCREW M5-.8 X 6
743	P0769743	HANDWHEEL CURVED PLATE SPRING

REF	PART #	DESCRIPTION
744	P0769744	FINE DOWNFEED GRADUATED DIAL
745	P0769745	WORM SHAFT
746	P0769746	SPINDLE MT#2
747	P0769747	QUILL SEAL, RUBBER (LOWER)
748	P0769748	TAPERED ROLLER BEARING 32005
749	P0769749	MILL QUILL
750	P0769750	QUILL SEAL 58 X 2.65, RUBBER (UPPER)
751	P0769751	PRELOAD ADJUSTMENT NUT
752	P0769752	WORM HOUSING
753	P0769753	HEX BOLT M6-1 X 25
755	P0769755	COARSE DOWNFEED LEVER M10-1.5 X 14
756	P0769756	KNOB BOLT M6-1 X 30
757	P0769757	COARSE DOWNFEED HUB
758	P0769758	COARSE DOWNFEED GRADUATED DIAL
759	P0769759	COMPRESSION SPRING 1.2 X 12 X 2.5
760	P0769760	CAP SCREW M4-.7 X 40
761	P0769761	FLANGE
762	P0769762	BUSHING
763	P0769763	WORM GEAR
764	P0769764	KEY 4 X 4 X 12
765	P0769765	GEAR SHAFT 16T
767	P0769767	HI/LO INDICATOR PLATE
768	P0769768	SET SCREW M8-1.25 X 8
769	P0769769	COMPRESSIONS SPRING 0.8 X 5 X 25
770	P0769770	STEEL BALL 6.5MM
771	P0769771	HI/LO HANDWHEEL
772	P0769772	SET SCREW M5-.8 X 16
773	P0769773	SPEED KNOB PLATE
774	P0769774	FORK SHAFT FLANGE
775	P0769775	FORK SHAFT
777	P0769777	SPINDLE RING 16MM
778	P0769778	HEX BOLT M3-.5 X 8
782	P0769782	HEX BOLT M3-.5 X 6
783	P0769783	SPEED SENSOR CORD
784	P0769784	HEX BOLT M3-.5 X 6
785	P0769785	DRAWBAR 3/8-16 X 8-1/2
786	P0769786	MOTOR CARBON BRUSH 2-PC SET
787	P0769787	MOTOR CARBON BRUSH CAP
788	P0769788	PRELOAD ADJUSTMENT SCREW M5-.8 X 10

G0768 Labels & Cosmetics



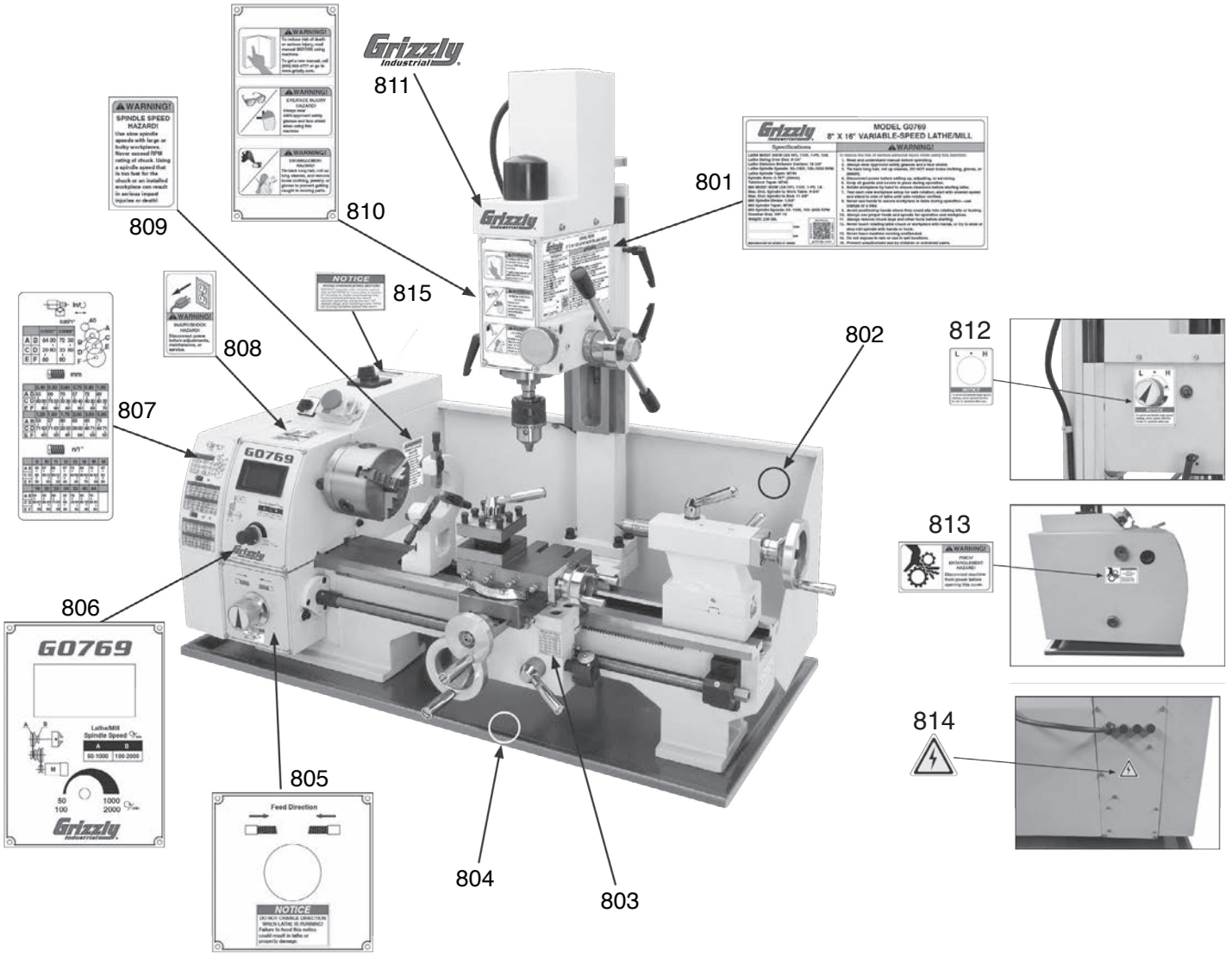
REF	PART #	DESCRIPTION
701	P0768701	FEED RATE CHART LABEL
702	P0768702	COMBO WARNING LABEL
703	P0768703	GENERAL WARNINGS LABEL
704	P0768704	VARIABLE SPEED LABEL
705	P0768705	GRIZZLY PUTTY TOUCH-UP PAINT
706	P0768706	GRIZZLY GREEN TOUCH-UP PAINT
707	P0768707	THREAD DIAL CHART

REF	PART #	DESCRIPTION
708	P0768708	SPINDLE SPEED HAZARD LABEL
709	P0768709	GEARBOX LABEL
710	P0768710	SPECIFICATIONS LABEL
711	P0768711	ELECTRICITY LABEL
712	P0768712	PINCH/ENTANGLEMENT WARNING LABEL
713	P0768713	OVERHEATING MOTOR NOTICE LABEL

⚠WARNING

Safety labels help reduce the risk of serious injury caused by machine hazards. If any label comes off or becomes unreadable, the owner of this machine MUST replace it in the original location before resuming operations. For replacements, contact (800) 523-4777 or www.grizzly.com.

G0769 Labels & Cosmetics



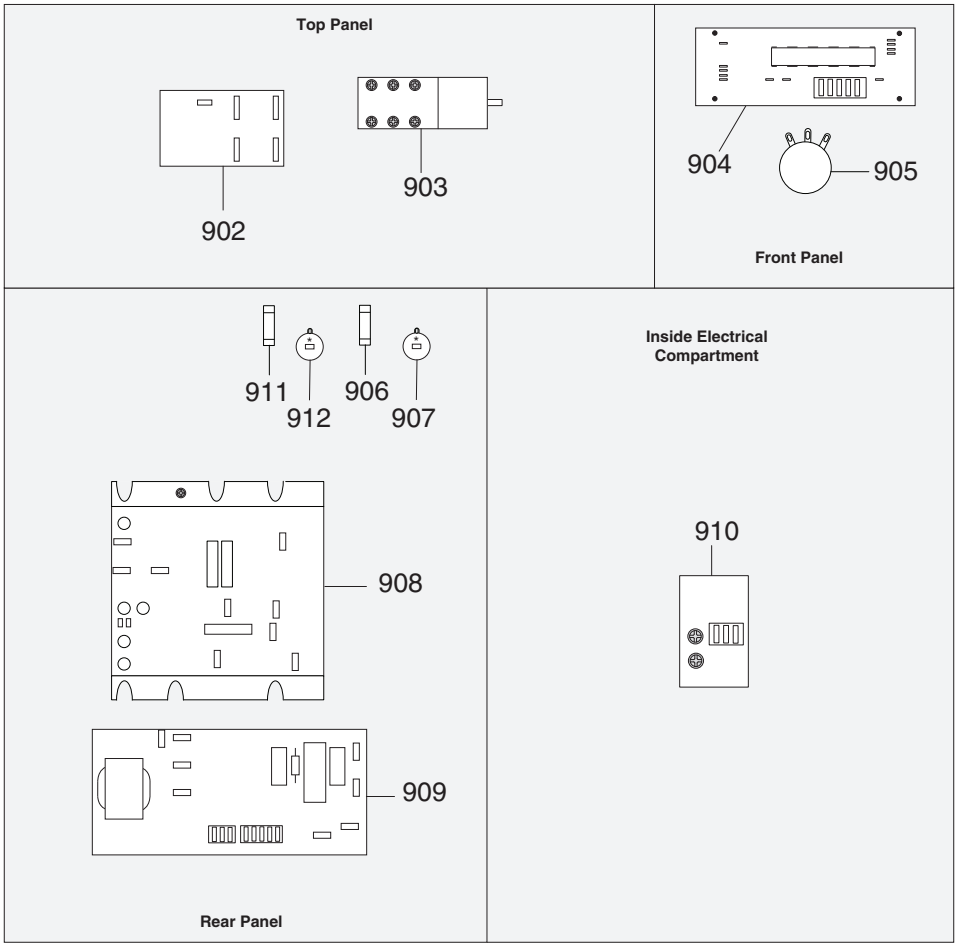
REF	PART #	DESCRIPTION
801	P0769801	MACHINE ID LABEL
802	P0769802	GRIZZLY PUTTY TOUCH-UP PAINT
803	P0769803	THREAD DIAL CHART
804	P0769804	GRIZZLY GREEN TOUCH-UP PAINT
805	P0769805	FEED DIRECTION LABEL
806	P0769806	CONTROL PANEL LABEL
807	P0769807	GEAR CONFIGURATION CHART LABEL
808	P0769808	DISCONNECT POWER WARNING LABEL

REF	PART #	DESCRIPTION
809	P0769809	SPINDLE SPEED HAZARD LABEL
810	P0769810	COMBO WARNING LABEL
811	P0769811	GRIZZLY LOGO LABEL (RED)
812	P0769812	LOW/HI SPEED LABEL
813	P0769813	ENTANGLEMENT HAZARD LABEL
814	P0769814	ELECTRICITY LABEL
815	P0769815	OVERHEATING MOTOR NOTICE LABEL

⚠WARNING

Safety labels help reduce the risk of serious injury caused by machine hazards. If any label comes off or becomes unreadable, the owner of this machine MUST replace it in the original location before resuming operations. For replacements, contact (800) 523-4777 or www.grizzly.com.

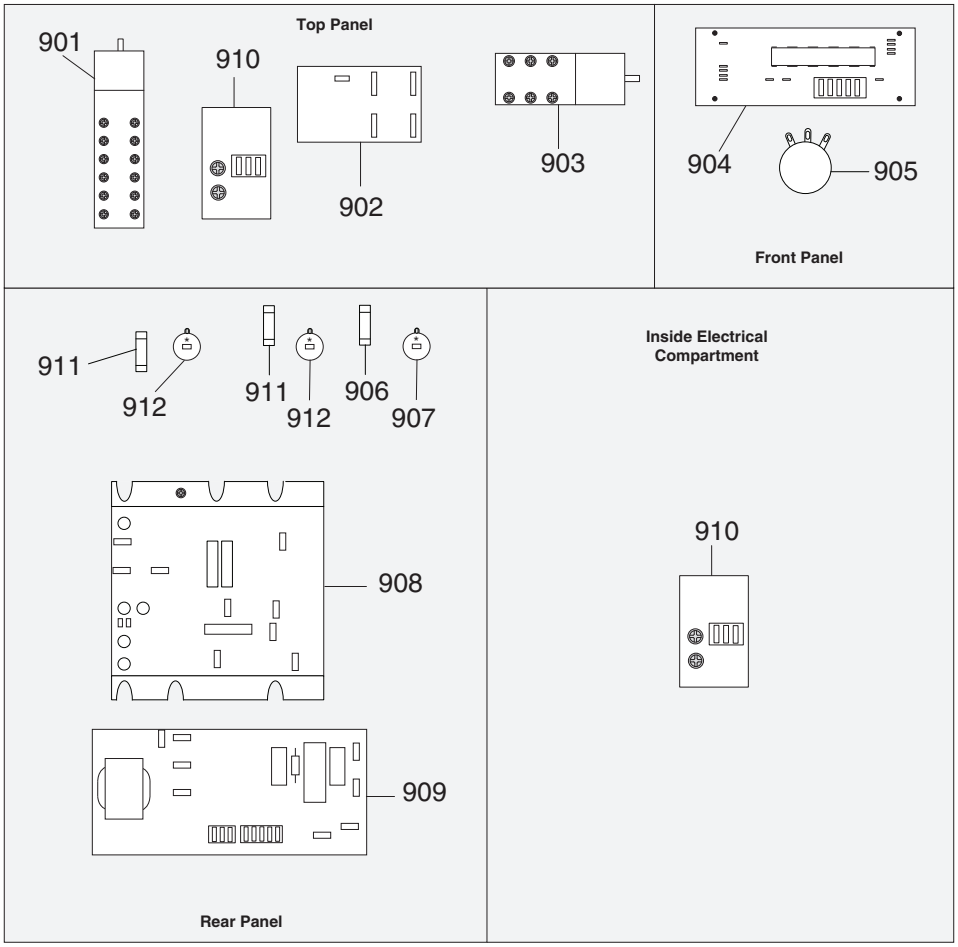
G0768 Electrical Component Diagram



REF	PART #	DESCRIPTION
902	P0768902	E-STOP KEDU JD17B 120V
903	P0768903	ROTARY SWITCH KEDU ZHA EN61058
904	P0768904	DRO CIRCUIT BOARD
905	P0768905	POTENTIOMETER WX14-12 1K7
906	P0768906	FUSE 15A 250V FAST-ACTING GLASS
907	P0768907	FUSE HOLDER MF528 15A 250V

REF	PART #	DESCRIPTION
908	P0768908	SPEED CONTROL CIRCUIT BOARD
909	P0768909	FILTER CIRCUIT BOARD
910	P0768910	RPM SENSOR
911	P0768911	FUSE 10A 250V FAST-ACTING GLASS
912	P0768912	FUSE HOLDER MF528 10A 250V

G0769 Electrical Component Diagram



REF	PART #	DESCRIPTION
901	P0769901	ROTARY SWITCH LW8-10/6
902	P0769902	E-STOP KEDU JD17B 120V
903	P0769903	ROTARY SWITCH KEDU ZHA EN61058
904	P0769904	DRO CIRCUIT BOARD
905	P0769905	POTENTIOMETER WX14-12 1K7
906	P0769906	FUSE 15A 250V FAST-ACTING GLASS

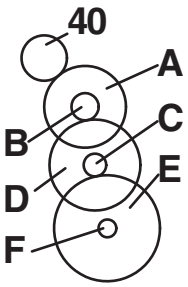
REF	PART #	DESCRIPTION
907	P0769907	FUSE HOLDER MF528 15A 250V
908	P0769908	SPEED CONTROL CIRCUIT BOARD
909	P0769909	FILTER CIRCUIT BOARD
910	P0769910	RPM SENSOR
911	P0769911	FUSE 10A 250V FAST-ACTING GLASS
912	P0769912	FUSE HOLDER MF528 10A 250V

SECTION 11: APPENDIX

Threading & Feeding Chart

0.0071"

		0.0037"	0.0068"
A	B	84 30	72 30
C	D	20 80	33 80
E	F	80	80



mm

	0.40	0.50	0.60	0.70	0.80	1.00
A B	55	60	70	57	72	80
C D	80 30	70 33	53 30	60 40	40 30	40 33
E F	80	80	80	80	80	70
	1.25	**1.50**	**1.75**	**2.00**	**2.50**	**3.00**
A B	53	57	80	63	63	70
C D	71 63	71 63	20 33	30 60	40 71	40 71
E F	60	50	80	84	60	50

n/1"

	9	10	11	12	13	14	16	18
A B	53	57	55	57	72	63	72	57
C D	80	80 72	80 72	70	40 60	40 60	40 60	63
E F	30	30	33	40	65	70	80	60
	19	**20**	**22**	**24**	**32**	**40**	**44**	
A B	53	53	60	53	72	63	70	
C D	80 63	80 60	71 53	55	40 30	55 33	55 30	
E F	50	50	55	80	80	80	80	

Thread Dial Chart

INDICATOR TABLE

TPI	SCALE
9	1-8
12	1-8
18	1-8
24	1-8
All Others	1, 4, 7

Grizzly Industrial, Inc. WARRANTY CARD

Name _____

Street _____

City _____ State _____ Zip _____

Phone # _____ Email _____

Model # _____ Order # _____ Serial # _____

The following information is given on a voluntary basis. It will be used for marketing purposes to help us develop better products and services. ***Of course, all information is strictly confidential.***

1. How did you learn about us?

____ Advertisement ____ Friend ____ Catalog
____ Card Deck ____ Website ____ Other:

2. Which of the following magazines do you subscribe to?

____ Cabinetmaker & FDM
____ Family Handyman
____ Hand Loader
____ Handy
____ Home Shop Machinist
____ Journal of Light Cont.
____ Live Steam
____ Model Airplane News
____ Old House Journal
____ Popular Mechanics
____ Popular Science
____ Popular Woodworking
____ Precision Shooter
____ Projects in Metal
____ RC Modeler
____ Rifle
____ Shop Notes
____ Shotgun News
____ Today's Homeowner
____ Wood
____ Wooden Boat
____ Woodshop News
____ Woodsmith
____ Woodwork
____ Woodworker West
____ Woodworker's Journal
____ Other:

3. What is your annual household income?

____ $20,000-$29,000 ____ $30,000-$39,000 ____ $40,000-$49,000
____ $50,000-$59,000 ____ $60,000-$69,000 ____ $70,000+

4. What is your age group?

____ 20-29 ____ 30-39 ____ 40-49
____ 50-59 ____ 60-69 ____ 70+

5. How long have you been a woodworker/metalworker?

____ 0-2 Years ____ 2-8 Years ____ 8-20 Years ____ 20+ Years

6. How many of your machines or tools are Grizzly?

____ 0-2 ____ 3-5 ____ 6-9 ____ 10+

7. Do you think your machine represents a good value? _____Yes _____No

8. Would you recommend Grizzly Industrial to a friend? _____Yes _____No

9. Would you allow us to use your name as a reference for Grizzly customers in your area?
Note: *We never use names more than 3 times.* _____Yes _____No

10. Comments: _____

_____

_____

_____

CUT ALONG DOTTED LINE

FOLD ALONG DOTTED LINE

Place
Stamp
Here

GRIZZLY INDUSTRIAL, INC.
P.O. BOX 2069
BELLINGHAM, WA 98227-2069

FOLD ALONG DOTTED LINE

Send a Grizzly Catalog to a friend:

Name_____

Street_____

City_____State_____Zip_____

TAPE ALONG EDGES--PLEASE DO NOT STAPLE

WARRANTY & RETURNS

Grizzly Industrial, Inc. warrants every product it sells for a period of **1 year** to the original purchaser from the date of purchase. This warranty does not apply to defects due directly or indirectly to misuse, abuse, negligence, accidents, repairs or alterations or lack of maintenance. This is Grizzly's sole written warranty and any and all warranties that may be implied by law, including any merchantability or fitness, for any particular purpose, are hereby limited to the duration of this written warranty. We do not warrant or represent that the merchandise complies with the provisions of any law or acts unless the manufacturer so warrants. In no event shall Grizzly's liability under this warranty exceed the purchase price paid for the product and any legal actions brought against Grizzly shall be tried in the State of Washington, County of Whatcom.

We shall in no event be liable for death, injuries to persons or property or for incidental, contingent, special, or consequential damages arising from the use of our products.

To take advantage of this warranty, contact us by mail or phone and give us all the details. We will then issue you a "Return Number,'' which must be clearly posted on the outside as well as the inside of the carton. We will not accept any item back without this number. Proof of purchase must accompany the merchandise.

The manufacturers reserve the right to change specifications at any time because they constantly strive to achieve better quality equipment. We make every effort to ensure that our products meet high quality and durability standards and we hope you never need to use this warranty.

Please feel free to write or call us if you have any questions about the machine or the manual.

Thank you again for your business and continued support. We hope to serve you again soon.

grizzly.com®
TOOL WEBSITE

Buy Direct and Save with Grizzly® – Trusted, Proven and a Great Value!

~Since 1983~

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24 HOURS A DAY!
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